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THERAPEUTIC MEANS

FOR THE

RELIEF OF PAIN.

[The] ancient Pilot, Pain,
Sits beside the helm again.—Shelley.

Hunc neque dira venena, nec hosticus auferet ensis,
Nec laterum dolor, aut tussis, nec tarda podagra.
Hor. *Sat.* i. 9.

Οὔτε Πόνος οὐκ ἔσται ἔτι.
Neither shall there be any more Pain.
Revelation of S. John the Divine xxi. 4.

THERAPEUTIC MEANS

FOR THE

RELIEF OF PAIN:

BEING THE

Prize Essay,

For which the Medical Society of London awarded the Fothergillian Gold Medal in 1874.

BY

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TO

THE PRESIDENT, OFFICERS, AND FELLOWS

OF THE

MEDICAL SOCIETY OF LONDON,

THIS ESSAY

Is Respectfully Dedicated,

BY THEIR OBLIGED FRIEND AND SERVANT,

THE AUTHOR.

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PREFACE.

The Essay which is now submitted to the Profession has just been carefully revised in every part, and an attempt has been made to bring it up to the scientific knowledge of the day. There is no pretension to make this book a dictionary of all past resources for the relief of Pain; my object is, not to furnish a museum of antiquities, but to offer something useful to present practitioners of Medicine. Doctors and patients are alike liable to be the victims of Pain; and it will be no small reward if my Work can contribute, even in the least degree, to diminish the sad heritage of human suffering.

Among Lord Bacon's Remains, we find a paper entitled "*Sudden* Thoughts, set down for Profit." But all one's thoughts, both sudden and deliberate, do not exhaust a subject which is practically inexhaustible. In the following pages it will be easy to discover omissions, though I hope that they are neither

numerous nor important. My critics and readers will oblige me by supplying what is wanting, and by helping in every way to render more complete this account of "Therapeutic Means for the Relief of Pain."

J. K. S.

Bath, *September* 14*th*, 1874.

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THERAPEUTIC MEANS

FOR THE

RELIEF OF PAIN.

CHAPTER I.

INTRODUCTION.

"Pleasure is the result of certain harmonious relations, of certain agreements; Pain, on the contrary, the effect of certain inharmonious relations, of certain disagreements. Pleasure is a reflex of the spontaneous and unimpeded exertion of a power of whose energy we are conscious; Pain a reflex of the overstrained or repressed exertion of such a power."—Sir William Hamilton.

The subject proposed for this Essay is strictly Therapeutic, and the general tenor of my arguments and illustrations will be therapeutic too.

The doctrines of Pathology, however, largely govern our therapeutic practice, and precision in the knowledge of the one determines precision in the practice of the other. It will be necessary, therefore, to review some current theories of the origin and nature of Pain; to discuss its ætiology; and to examine its ulterior effects on the functions of the animal economy.

The Philosophy of Pain is still wrapped in mystery, nor shall we fully explore it by merely unravelling its materialistic phase. Nevertheless, we must grasp it at least partially from a material point of view, because most of our agents for relieving it are material. Moral and material agencies may, and often do, work together; and the "wise physician" will try to guide both to a common end. The aim of Medicine is so far composite that if the moral be found fighting against the material, we ought to take cognizance of the fact, and reduce the elements, if possible, to harmony. Our primary business is with visible signs and substances. In these are enclosed those subtle essences which affect the nerves and nerve-centres while circulating in the blood; but we know how the influence of medicines may be modified, or overpowered, by the shadowy traits of mind and temper, by climate and weather, by the occult forces of sea and land, and by the bias of external circumstances generally. And to direct and control these factors, is a large part of the physician's province and duty.

The main scope of these pages is to treat of those therapeutic means for the relief of Pain which are called medicines in the conventional sense of the word. Other means may be handled with more or less success by non-medical persons; even the sufferer of pain can contribute some aid to his own relief: but drugs can be administered properly only by persons trained to use them. It is quackery to play with such tools, and a rough empiricism which frames conclusions on

the value of drugs without the checks and confirmations of experimental evidence. The boldest and most independent sceptic—he who in rude health is sceptical and defiant—is obliged by the terror and the victory of pain [1] to confess the beneficence of the substances which are ordained by a merciful Creator for the subduing and the extinguishing of that pain. To discriminate and regulate the action of those substances is a faculty which can be reached only by labour and learning; but no toil has a more rich reward. All enquiry having this object in view helps to elevate the mind and character, and the variety of resource which is gained by it is a possession of no mean value in the conduct of life.

I propose to consider my subject in the following way :—

(A) An introduction on the nature of Pain.

(B) A sketch of the principal anatomical seats of Pain.

(C) An account of the therapeutic means for the relief of Pain.

[1] "Pain is perfect misery, the worst
Of evils; and, excessive, overturns
All patience."
—*Paradise Lost*, vi. 462—464.

CHAPTER II.

AN INTRODUCTION ON THE NATURE OF PAIN.

"The generic name, Pain, . . . expresses an ultimate fact of human consciousness, a primary experience of the human mind resolvable into nothing more general or more fundamental than itself."—MR. ALEXANDER BAIN.

THE great questions asked about Pain are: What is it? Can we define it? Is it a thing or a sensation which can be measured?

Now Pain is so far metaphysical that we cannot, in a large number of instances, explore its meaning and its source. We depend upon the sufferer of pain for all information about its amount and its quality. A subtle essence has to be translated into words: the words themselves are used in different senses by different people: nor can we set up a standard by which the use of those words shall be governed. The phenomena of Pain may be partially interpreted by language; but the exercise of other faculties will help us in the interpretation. The gestures and postures which a sufferer exhibits; the cries, the pathos, the very tones of the voice; the expression and the changes of the countenance; and the effect of the suffering on various organs and functions: —form a collective picture which is an admirable

(though sometimes fallible) guide to the careful enquirer. But the enquirer himself may be unintelligent, or impatient, or perverse; and so bars may be interposed on his side to the discovery and reception of the truth. There are, therefore, many possible obstacles to the realization of Pain in both its sort and its degree. Experience and insight on the one side, and a vivid use of words on the other, may lessen the force of some of these obstacles; but the very nature of things prevents us from entirely overcoming them.

What has now been said ought not to forbid us to study Pain predominantly on its physical side. From this side we may hope to approach it, to meet it, and to grapple with it. Endowing it with substance, if not with form, we seem to see our enemy and to challenge him. Clothing Pain in the reality of fact as much as we can, we are the more impelled to search for a physical basis to physical phenomena, and to discard the idea of "functional derangement" as unphysiological and irrational. We look for the cause of Pain in dead nerves and dead nerve-centres; and if we miss the expected result to-day, we do not doubt that it will be found hereafter with more perfect instruments of scrutiny. It is at least safer to act as if physical changes were at the root of morbid phenomena; for we can contend more distinctly with them, and it is much more comfortable to believe that we are dealing with objective truths than with ghostly and unimaginable things. We build our hopes of treatment on the possibility of those changes being transitory, and we

relinquish our hopes only when we have overwhelming evidence that the textural damage is beyond repair. Our lessons in Therapeutics flow from our doctrines in Pathology, and heresy in the one begets heresy and imperfection in the other.

Let us set up an ideal human body, the balance of whose functions is so perfect that there is no consciousness of any member or organ. Nature goes on in unceasing and innocent activity, and everything that can cause pain is absent and unknown. The physiological calm is complete. Now what is the first ripple which spoils this calm? The initial tremblings of nerves that may be the earliest prelude of pain are called "tingling," —or in more homely phrase, "pins and needles." By steps so gradual as to be almost imperceptible each tiny impression of pain becomes sharper and prolonged, and (to use an obvious metaphor) the drops become aggregated into a stream. The different conditions of a stream of water aptly figure the different species of pain:—it may be too speculative to assert that each species is caused by a separate molecular disturbance, but it is true that much depends upon the size and relative anatomy of a suffering nerve. Any sensation, then, which is unusual, vehement, and agonizing, is rightly called Pain. Going on further, we come to a stage at which a nerve can no longer mediate sensations; it is no longer able to be the carrier of either pain or pleasure. It is said to be "numb," and to be the cause of numbness: it is not dead, but physiologically defective: it refuses to be a teller and a sentinel to other

functions. Technically, all sensations which deviate from the norm and are identified as Pain, are classified as Dysæsthesia; and the abolition of sensation is *pro tanto* called Anæsthesia.

Such is the pattern according to which Pain may be measured and divided. There are, however, several intervening grades of sensorial aberration which may be thus traced. There are sensations which hover between pain and not-pain: fierce itching, for instance, implies a highly exalted state of nerve-peripheries, and many persons would suffer positive pain rather than the horrible irritation of prurigo and scabies. How shall I describe the sensation of aching? It fluctuates between the impressions of fatigue and real pain, with an invariable tendency to abate if a wearied part be allowed to rest. Spasm of muscle is a frequent cause of pain, but not necessarily so. A spasm may be so mild and unobtrusive as not to be associated with any particular sensation; tonic convulsion (cramp) is always accompanied by pain, but no pain attends clonic convulsion (chorea). Hiccough is a short convulsion, but the diaphragmatic spasm is not severe or prolonged enough to compress nerves. Asthma is a much longer convulsion, but the pain which accompanies it is merged in the larger distress of the difficulty of breathing, this difficulty being a direct effect of the convulsion. The pain which attends spasm of some internal ducts (such as the passages which lead from liver and kidney) is compounded of violent muscular contraction and the irritation of the solid body which provokes it.

It is our business in this Essay to contemplate as closely and as logically as we can the objective fact of Pain. Stripping away all foreign circumstances, we come at last to the real dread thing. Dr. P. M. Latham well says that "to any one who should insist upon its being stated in terms what Pain is, it would be a sufficient answer that he knew himself perfectly well what it was already, and that he could not know it the better for any words in which it would be defined. Things which all men know infallibly by their own perceptive experience, cannot be made plainer by words. Therefore let Pain be spoken of simply as Pain."[2] An ingenious writer classifies Pain under four distinct varieties:[3]—(*a*) Inflammatory pain caused by an active disease; (*b*) Irritative pain, depending on nervous irritation, and having sometimes a local origin; (*c*) A third kind is called reflex, as the pain in the knee from hip-joint disease; (*d*) A fourth kind of Pain may be called Eccentric, not originating in the painful part, but in the brain or nerve-centres; of such a sort are the pains of Hysteria. This classification is good so far as it goes, but it is not exhaustive. We may assume as a positive truth that Pain connotes a molecular disturbance in the nerve which carries the idea of Pain to the sensorial centre; and hence the name of Neuralgia as an individual disease. Further, all recent enquiry tends to show that so far as Neu-

[2] *British Medical Journal*, June 28, 1862.

[3] Dr. Headland, in his Fothergillian Prize Essay on the "Action of Medicines," 1852, p. 330.

ralgia is connected with physical change, that change is in the direction of a lowering and degeneration of tissue. Something "frustrates function;" something ripples the physiological current, and vital force is hindered or degraded. But Pain, as Inflammation, seems like a substantive entity grafted on to the body, clamouring for expulsion or reduction; and so the old teaching of Therapeutics was that this troublesome busybody must be put down and ousted by all lawful means, and that we must take no rest until this be done.

Let us hear some of the evidence rehearsed by Dr. Anstie about the essential quality of Neuralgia.[4] He notices that Pain has been described by some of the most distinguished writers on nervous diseases as a hyperæsthesia. Yet enquiry will show that Pain is not only not a hyperæsthesia, or excess of ordinary sensory function, but something very nearly the opposite of this. The action of nerves, under the pressure of extraordinary influences, may include all manner of vagaries which have nothing in common with the effects of ordinary functional stimulation:—which are, in fact, nothing but perturbation. Just as in tetanus there is an explosion of motor force, so with sensory nerves there may be such derangement of usual sensation as to convey the abnormal idea of Pain. Among the neuralgias, those are the most acutely agonizing which occur under circumstances of impaired nutrition incident to the period of bodily decay, and there are strong reasons for the belief that there is especial impairment of the nutrition

[4] "Neuralgia, and the Diseases that Resemble It." London, 1871.

of the central end of the painful nerves. To find a parallel to the severity of this class of pains, we must turn to the case of organic tumours exercising continuous pressure on the branches or trunk of a nerve ; and that which can be done in the production of severe pain by these affections of the peripheral portions of nerves, we might *à priori* expect would be done by slighter but continuous changes in the nutrition of the more important portions of the nerve itself—its central grey nucleus. Hence, Pain involves a depreciation of true function ; it is due to a perturbation of nerve-force ; and the susceptibility to this perturbation is great in proportion to the physical imperfection of nerve-tissue, until this imperfection reaches the extent of cutting off nervous communications (paralysis).

Dr. Anstie points out, further, that the condition of a patient, at the time of a first attack of neuralgia, is one of debility, general or special. The sufferer is either decidedly anæmic, or has undergone some exhausting illness or fatigue. A ruddy complexion and a fair amount of muscular development may conceal much structural and functional weakness of the nervous system. If we observe the events which precede an attack of neuralgia, we shall find that the skin supplied by the nerves about to become painful is often remarkably anæsthesic, and that sensation is blunted in the same parts in the intervals of pain. It is well known that anæmia and malnutrition always aggravate the tendency of existing weak portions of the nervous system to be affected with painful disorders.

The doctrine which ought to be uppermost in the therapeutic mind is this:—all causes that impair strength are prone to generate hyperexcitability, which may show itself in the sensory, or motor, or intellectual departments. The formula is in the words of Dr. Handfield Jones,[5] and is illustrated by the theory that Neuralgia, Spasm, and Delirium are identical subjectively, though differing greatly in outward appearance. It will be shown by and bye in an impressive way that the same remedy may, according to the circumstances in which it is administered, control the spasm of Whooping cough, the pain of Neuralgia, and the "wanderings" of Alcoholism or of acute Mania. A diagram of the subject will exhibit itself thus:—(*a*) derangement of sensory force is shown first by dysæsthesia (pain), then by anæsthesia (numbness); (*b*) derangement of motor force is shown first by spasm, then by paralysis; (*c*) derangement of intellectual force is shown first by delirium, then by coma. The spasm of muscle, the pain of nerve, and the delirium of brain, are said to be correlative phenomena: and a similar parallel is held to exist between paralysis of muscle, the numbness of nerve, and the coma of brain. Further, I can show the ready interchangeableness of some of these phenomena. Let the face be exposed to cold, and this may cause sometimes facial palsy (lesion of seventh Nerve), sometimes neuralgia (lesion of fifth Nerve): here the motor and sensory functions are mediated by distinct nerves. Again, suppose that we look at an exhausted limb, in

[5] *British Medical Journal*, July 23, 1870.

which the motor and sensory nerves are packed in the same bundle. Take the arm:—a sempstress works hard, and she may suffer at one time brachial neuralgia, and at another time stiffness of hand induced by spasm of muscles of the fore-arm. But let the exhaustion be increased by even a small degree, and the sufferer may have Numbness or Paralysis; each of these states being an aggravation of Pain and of Spasm respectively.[6]

Hysteria is a disorder which supplies a number of ready-made experiments on the pathological physiology of the Nervous system. It is a disorder of weakness, call it what we will; and there is no territory of nerve-function which it may not invade. Thus, a weak person (male or female; born weak or become weak) has pain here or pain there; or some nerves have overleaped the state of pain, and become numb. Another weak person has spasm in one part of her body—say in the glottis, causing aphonia; and in a distant part of the same body a limb may be palsied and helpless. Finally, a hysterical patient may be irritable, reckless, strange in manner and conversation (delirium); or heavy, stupid, and even for a time drowsy in brain-faculties (coma). Now every one of these conditions shows a lack of co-ordinating power, a *pro tanto* incapacity to do what the person wishes to do; a root weakness in nerve-thread or nerve-cell. Such are the flitting shades and grades of

[6] Doctor Handfield Jones's thoughtful papers are always worth reading, and I refer with pleasure to two recent contributions in the *British Medical Journal*, March 21 and 28, 1874), illustrating the mutual relation and interchangeableness of 'hyperexcitability and paresis' (paralysis). The vital condition of nerve-tissue is insisted on as of high importance.

disorder, changing almost from hour to hour. Yesterday there was pain; to-day there is palsy; to-morrow there may be a mild delirium. All are products and manifestations of the same ultimate *defect of force*, the need of which reduces a body or a thing to quiescence and stagnation.[7]

As an impartial chronicler of the fluctuating theories of the day, I must direct attention to Dr. Chapman's doctrines, which are antagonistic to those of Drs. Radcliffe[8] and Anstie. Instead of atrophy of the root of the nerve in which the pain is seated, Dr. Chapman declares that the local condition is rather one of hyperæmia.[9] He says that, as a matter of fact, he can command the states of vascularity in the nerve-centres; and further, that he finds the state of the local circulation which corresponds with the relief of pain to be one of comparative anæmia, the inference being that the preceding state was the contrary one of hyperæmia. As a step beyond even this, Dr. Chapman asserts that to recall the hyperæmia is to recall the pain. We listen with impartiality to all theories which can adduce a fair

[7] Trembling is another example of deficient force, and exists either as a specific product of a particular disease (paralysis agitans), as Lord Byron sings—

> "Her small white hand could hardly reach the taper;
> It trembled as magnetic needles do—"

or it is a note of downright collapse:—"For fear of him the keepers did shake, and became as dead men."—Gospel of S. Matthew xxviii. 4. Compare Revelation of S. John the Divine i. 17.

[8] See his "Lectures on Epilepsy, Pain, Paralysis, and certain other Disorders of the Nervous System;" London, 1864.

[9] I refer to Dr. Chapman's book, entitled, "Neuralgia, and other kindred diseases of the Nervous System; their nature, causes, and treatment;" London, 1873.

amount of evidence ; but neither the hyperæmic nor the atrophic theory of pain can be said at present to be scientifically verified. The collateral proofs which can be gathered seem to preponderate on the weak atrophic side; and an opinion in this direction might be provisionally framed from a study of the therapeutic facts which will be presented hereafter.

The terminology of Pain is peculiar in this—that sometimes we speak of certain viscera or parts being painful, instead of the nerves which enter and supply those viscera or parts. The modern name of Myalgia announces that a muscle is painful; that is, a bulk of tissue called Muscle tells us of the sensation called Pain. But it is not the sarcous particles of the muscle which mediate the pain : this can be conveyed only by the nerves which permeate (if they do not penetrate)[10] the ultimate atoms of muscle as of every other organ. So that all Myalgia is Neuralgia. Again, a peritonæum or a pleura is inflamed ; now all inflammation is painful, especially that of serous membranes ; but the impression of pain is caused by the inflammatory stuff squeezing and pressing the nerves which ramify on those membranes. So that the suffering of a peritonitis or a pleurisy is Neuralgia. Therefore, the meaning of any structure being painful is this :—the nerve-threads which are bound up with the structure are involved in the causes which bring about the pain, and tell that tale of pain to the sensory centre. And this must

[10] See Stricker's "Human and Comparative Histology," (New Sydenham Society), vol. i. pp. 195—198.

always be so, even when the cause or causes have primarily nothing to do with nerves. There are some diseases, moreover, which clamour for relief, not on account of the textural damage they do, but chiefly on account of the terrible pain which that damage is associated with.

All Pain is either physiological or pathological. Pain is physiological in the act of parturition; the contraction of uterine muscle would not be to any effective purpose without pain. By pain, a nerve shows its resentment at physical irritation, such as that caused by a bullet or a splinter of bone, by an aneurism or a cancer. Here we have a purely coarse damage of tissue, implying a bending or destruction of nerve fibrils. As a rule, Pain is pathological. If we could pick out and inspect a nerve which is the medium of temporary pain, it is probable that we should see no difference between it and any other nerve;[1] just as we can discern no peculiarities in a copper wire while it is conveying an electric stream. To the mortal eye that wire is the same now as it was before; and it is possible that the molecular motion caused by the passage of electricity may elude all our present methods of scrutiny. It is an old (and oft-quoted) romance of Romberg's that Pain is the prayer of a nerve for healthy blood; much more frequently is it the shriek of an injured or offended creature. A nerve withers, and it cries; inflammation

[1] This statement may soon have to be qualified; at least such was the impression conveyed by a remark in Dr. Burdon-Sanderson's Address on Physiology before the British Medical Association in London. (August, 1873.)

ruins its delicate tissue, and it cries; it is poisoned by syphilis or malaria, and it cries. Pain by itself (says Dr. Latham) may kill; it may overwhelm the nervous system by its magnitude and duration. "Playing upon the nerves as upon an instrument, the force which Pain can exercise over the movements of Disease is very various. It can raise, and it can depress them. It can quicken them into twofold activity and liveliness; it can subdue and bring them down as low as death. Moreover, still playing upon the nerves, it can so jar and spoil the concord of symptoms as to falsify the disease, and make it appear other than it is."

And even when it does not kill or bring disease, Pain may wear and destroy organic structure. Nerve-elements are not proof against the disintegrating energy of constant pain; and serious damage to the minute integrity of nerves impairs the functions over which those nerves preside. A familiar example of this impairment is seen in the vesicular eruption of Herpes, which may occur on the skin, on organs of special sense, and on mucous membrane. The nutrition of any of these parts is injured to an extent tolerably proportionate to the degree of pain. It is well known that Sciatica is often followed by motor weakness of the lower limb. And so the physician strives to cure pain for many reasons besides its immediate hurt and trouble. Yet, paradox as it may seem, we sometimes perform processes which we know will cause pain, but which are done for the ultimate benefit of the sufferer. It is in acts like these that Mind most proudly triumphs over Matter;

subduing it so completely that present evil is not only endured, but cheerfully accepted for the sake of future good.

But Pain may rise to the useful dignity of being an instrument of diagnosis. For example, we can sometimes determine with accuracy the nature of a disease by the kind of pain which it produces. This is conspicuously seen in the instance of the stomach. At other times our sagacity is tested by the mimicries which the Nervous system plays to us, as if from delight to construct problems and riddles; and on this matter we may all read with profit some recent lectures by Sir James Paget. In the case of children there is a still higher challenge to our intuition and sympathy: for the difficulties in the way of interpreting infantile pain can be overcome only by conscientious clinical study, and even with this it is most easy to go astray.

Enough, then, has been said to summon the medical practitioner to the eager problem now before him. He should rouse and gird himself as to a serious task. Speculations on the nature of Pain may become the philosopher in his closet, and even the student of Medicine may discuss the subject with profit and propriety. But when the student develops into the clinical practitioner, speculation must change into ripe and decisive practice. Mr. Buckle rightly says that "to suppose that a theory of disease should, as a matter of education, precede the treatment of disease, is not only practically dangerous, but logically false."[2] This arises

[2] "History of Civilization in England" (Cabinet Edition), iii. 416.

from the fact that Medicine is still "essentially an Art," and not a "perfect Science." Hence, our inability to construct a perfect theory of Pain cannot be an apology for ignorance of known methods of coping with it. It is no shame that some of those methods are empirical; the question is, are they successful? To know and use them aright is not only a scientific duty, but a religious duty. We have Pain bodily before us in all its phases and ravages; and there is scarcely an enquiry more noble than that which investigates our resources for the alleviation and cure of Pain—the penitential heritage of a sinning and dying World.[3]

[3] In these pages it is impossible to discuss in any adequate manner the metaphysical aspect of Pain. From the earliest days this question has engaged the dialectic skill of Philosophers and Divines. "Pain," says a Quarterly Reviewer (ciii. 81), "is the grand preserver of existence, the sleepless sentinel that watches over our safety, and makes us both start away from the injury that is present, and guard against it carefully in the time that is to come." Nor ought we to forget the depressing effects of the sorrow which naturally follows Pain; when this flees away, that will be extinguished too.

> "Sorrow hath fled away, and Pain
> Dares not invade the guarded nest."
>
> —*Christian Year: St. Peter's Day.*

CHAPTER III.

A SKETCH OF THE PRINCIPAL ANATOMICAL SEATS OF PAIN.

Motor and sensory nerves are commonly bound up together ; but the separation of the two sets of nerves is sometimes sharply and anatomically complete. A little more than twenty years ago[4] it was thought that motor nerves might (under some circumstances) be the seat or vehicle of pain ; but there is no valid reason for believing this, and we shall be in harmony with all sound pathological doctrine when we assume that Pain, as a modification or error of sensation, is "conditionated" only by sensory nerves.

The peripheral extremities of nerves ramify all over the skin ; and the faintest injury which breaks the cutis is perceived by those nerves, and conveyed to the sensorium. A bruise, a prick, a scratch, and a cut, cause sensations peculiar to each, so as to be instinctively recognized by the sufferer. Wounds of greater size and importance, scalds and burns, and the lesions created by sprains and dislocations and fractures, affect a number of

[4] By Dr. Downing, for example, in his monograph on Neuralgia, published in 1851.

sensory nerves, and produce a complex condition which ranges from uneasiness to the acutest pain. The tracts of mucous membrane are less sensitive, but are resentful of injurious extremes of heat and cold. Serous membranes are more liable to painful influences than any other structures, and may give rise to the sharpest agonies that can afflict the human body.

Consequently, wherever there are sensory nerves, there may be pain. But often we can mark out certain tracts as specially the source or seat of pain, and we can identify those tracts with the anatomical position of certain nerves. Hence the name of Neuralgia, which declares merely a symptom and not any theory of the Pain. It is natural that the sufferer should think most of the actual painful nerve; but the insight of the scientific physician carries him up to those "central changes" which he tries to understand and control, and which are very frequently the essential cause of the Neuralgia. The central morbid process is the important factor to remember, for it is the reason why trophic and motor symptoms so often complicate sensory aberrations. The "perturbing influence radiates centrifugally along divers nerve-paths."

Following the best authors in the anatomical classification of my subject, I divide Neuralgia proper into Superficial and Visceral Neuralgias.

(A) The Superficial Neuralgias are thus subdivided :—

(*a*) Trifacial Neuralgia. Neuralgia of the fifth Nerve always exhibits itself with especial violence in certain foci, which Valleix was the first to define with accuracy.

These foci are always in points where the nerve becomes more superficial, either in turning out of a bony canal, or in penetrating fasciæ. The ophthalmic division of the nerve has five foci. The supra-maxillary division has five foci. And six foci are found in the inferior maxillary division. There is another focus which corresponds to the inosculation of various branches. Ophthalmic neuralgia is the most common, and the most frequent foci of pain are the supra-orbital and parietal points. *Migraine* (or sick-headache) is a noteworthy variety of trigeminal neuralgia, and the so-called *clavus hystericus* is another.

(*b*) Cervico-occipital Neuralgia. In this form the posterior branches of all the first four pairs of spinal nerves are affected; the great occipital being the most important.

(*c*) Cervico-brachial Neuralgia. This class includes all the Neuralgias which occur in nerves originating from the brachial plexus. The neuralgias of the shoulder, arm, fore-arm, and hand, are extremely troublesome and severe, owing to the number of painful foci. The most common seat of brachial neuralgia is the ulnar nerve.

(*d*) Dorso-intercostal Neuralgia. This is an affection of certain of the dorsal nerves. These nerves have three points of division, and there are three sets of superficial branches which make their way towards the surface near these points. Here the foci of pain are always found. The pain below the left breast, which so many women suffer, and the pain which attends Herpes zöster, are familiar examples of dorso-intercostal neuralgia.

(*e*) Dorso-lumbar Neuralgia. Valleix enumerates five foci of this form, which is not common. The foci most often observed are in the vertebral region and over the *crista ilii.*

(*f*) Crural Neuralgia. This is almost always a secondary affection, arising in the course of neuralgia which primarily showed itself in the external pudic branch from the plexus.

(*g*) Sciatic Neuralgia. This is very frequent and important. Dr. Anstie describes three varieties. One is connected with a strongly-marked nervous temperament, and is excited by bodily fatigue or mental distress. Another occurs mostly in persons who have been subject to excessive muscular exertion, or have been much exposed to damp cold : this variety is characterized by obstinacy and intractability. Anæsthesia, convulsive movements of muscles, and paralysis, are not uncommon complications of sciatica. A third variety is that connected with syphilis or rheumatism, and is caused by inflammation of the tissue around the nerve. All varieties of Sciatica have one or more foci of severest pain, and Neuralgia of the leg and foot are sometimes troublesome maladies.

(B) The Visceral Neuralgias are thus subdivided :—

(*a*) Cephalalgia, or true brain neuralgia, can be identified as " headache " apart from pain of superficial nerves.

(*b*) Cardiac Neuralgia, under the name of *Angina pectoris,* is a serious and fatal disease. There has been a great discrepancy of opinion about its nature and

origin; is there any foundation for Dr. Chapman's doctrine that there is an essential analogy between *Angina pectoris* and epilepsy?

(*c*) Gastric Neuralgia is represented by stomach-ache and heartburn. Romberg describes Gastrodynia as a "hyperæsthesia of the Vagus nerve."

(*d*) Enteric Neuralgia (enteralgia and colic) consists of cutting, tearing, or griping pains, sometimes accompanied with more or less retraction of the abdomen and spasm of the abdominal muscles, and sometimes with great distension of the whole cavity. Enteric and gastric neuralgia may co-exist. Lead-colic is a speciality which has been graphically sketched by Romberg.

(*e*) Hepatic Neuralgia may be distinctly identified by the careful observer. There is no pyrexia, but the pain may be even more severe than that of acute hepatitis, and is usually accompanied by tenderness of epigastrium and hypochondrium.

(*f*) Renal Neuralgia is said to be distinguishable from the pain caused by the passage of urinary stones.

(*g*) Neuralgia of the Bladder and Urethra is a disorder which can be clearly defined.

(*h*) Neuralgia of the Testicle and Neuralgia of the Ovaries have been described respectively by Sir Astley Cooper and Dr. Ritchie, and are by no means uncommon.

(*i*) Uterine Neuralgia, unconnected seemingly with organic disease, has largely engaged the attention of obstetric practitioners. It is now thought to be in most

cases caused by displacement of the uterus. "Menstrual colic" is the name given by Dr. Eulenberg to the painful disorders of menstruation.

(*j*) Laryngeal and Pharyngeal Neuralgia has been described by Dr. Anstie, though its identity does not seem quite clear.

It was remarked in the last chapter that the nomenclature of Pain sometimes makes us speak of organs and parts that are painful, rather than as neuralgia of nerves entering and supplying those organs or parts. According to this principle, we consider—

(*a*) Myalgia, which is "pain produced in a muscle obliged to work when its structure is imperfectly nourished or impaired by disease." Examples are in lumbago and stiff neck.

(*b*) Spinal Irritation expresses "all those conditions in which, without any special mental affection, and without any single nerve being definitely affected, there are sensations varying between cutaneous tenderness and acute pain approaching neuralgia in character, together with fixed tenderness of certain vertebræ on deep pressure." Hysterical hyperæsthesia (often scarcely dysæsthesia) may be mentioned here.

(*c*) Hypochondriasis is the term given to phenomena which are manifested in a scattered form, affecting especially the spinal sensory centres. Psychical peculiarities are associated with it.

(*d*) Some of the essential phenomena of Locomotor Ataxy consist of intense darting pains, chiefly in the limbs.

(*e*) Severe pain is part of the history of Cerebral Abscess and Cerebral tumour.

(*f*) Pains of Alcoholism do not follow the course of a recognizable single nerve, but are usually present in more than one limb and generally in both halves of the body at the same time. Here, as in locomotor ataxy, there is undoubted disease of nerve-centres.

(*g*) The pain caused by Syphilis is terrible and extensive, and may occur both in the earlier and later stages.

(*h*) Rheumatism and Gout attack many regions of the body, and almost necessarily cause pain. The same may be said of the complications of several zymotic and enthetic diseases.

(*i*) Spasms of certain internal ducts occasion pain of the sharpest kind.

(*j*) There are various Morbid Processes which cause pain, partly by reason of their position and partly by the pathological changes produced by them. Of these processes Inflammation and Malignant Disease stand out as chief; and they are often the agencies by which stricture, twisting, and obstruction of internal viscera and channels are brought about.

(*k*) Neuralgia may arise almost anywhere from what is called "reflex irritation."

Finally, Neuralgia has been classified according to the time of life at which it occurs:—thus, there is the Neuralgia of the period of bodily development; of the middle period of life; and of general vital decay.

CHAPTER IV.

AN ACCOUNT OF THE THERAPEUTIC MEANS FOR THE RELIEF OF PAIN.

THE earlier chapters of this treatise are preliminary to the enquiry which we are now in a position to institute, and which relates to the therapeutic means for the relief of Pain. In this province of my subject experience and practice should go hand in hand; there ought to be sufficient knowledge of our resources, and sufficient aptitude to apply them. One qualification without the other is a weakness, if not a disability; and the competent practitioner seeks to be equipped for his calling by all the methods within his power.

There seem to be sufficient reasons why I should speak first of the physical, or so-called medicinal, means for the treatment of Pain. We can best measure our capacity and knowledge by the use of a physical standard; we are taught earlier and more fully the use of medicines and medicinal means generally; and the mind is educated and disciplined very much within the scope of what we can see and handle.

Then, we may group in different ways the substances which we administer and apply. One way is to classify

them according to their real or supposed effects; and this would be the natural way if our primary object now were to illustrate their general therapeutic action. But we have to speak of therapeutic substances only so far as they are useful for the purpose named in the title of this book—the relief of Pain. Hence the mode of administration appears a good basis for arrangement; because we are supposed to be asking ourselves, how are we to put this drug into that body so as to get most quickly what we want—the relief of Pain? I propose, therefore, to make this point a key to a scientific division of the subject, and to an easy and practical manner of discussing it.

Medicines intended for the relief of Pain are administered

(A) Into the Digestive canal:
  (*a*) By the Mouth;
  (*b*) By the Rectum.

(B) Into the Genito-urinary canal:
  (*a*) Of the Male;
  (*b*) Of the Female.

(C) To the Respiratory tract of membrane:
  (*a*) By Inhalation;
  (*b*) By Insufflation.

(D) To or under the Skin.

Section I.

(A) I enumerate and describe, firstly, Medicines which may relieve Pain when (*a*) given by the Mouth.

(1) Opium is the prince of these. In every case of pain, the mind turns instinctively first to Opium. The impulse is sometimes crude, but it is perfectly legitimate at the outset. Opium commands an immense suffrage, and mostly a true suffrage; but there is an important residue of instances for which Opium is improper. To define the right instances is to exclude by implication the wrong ones. Under the head of Opium we may conveniently study the doctrines of Stimulus and Narcosis, and their physiological relation to the cure or abatement of Pain. We must resist all temptation to frame, deductively, hypotheses of the nature of Pain from the action of remedies: a speculation of this sort may be of intrinsic interest, but there is no room here to travel beyond the therapeutic department of my subject.

Claude Bernard arranges the constituents of Opium in three classes:—the soporific, the convulsant, and the toxic; some of the constituents being classifiable under two or even all these divisions. We have to examine here only the Soporifics, which are Narceia, Codeia, and Morphia: of these Morphia and its salts are best, and Codeia next. Three times more Codeia than Morphia are necessary to produce equal anæsthetic effects.[5] Besides the alkaloids and neutral bodies, Opium contains resins and gums, extractive and fatty

[5] M. Bouchut in *Gazette Médicale de Paris*, No. 21, 1872.

matters, a volatile oil, and inorganic salts. This enumeration is necessary, not merely to show the extreme complexity of Opium, but to keep in our memory the fact that the operation of the entire drug differs in some therapeutic particulars from the separate operation of any of its essential constituents.

The British Pharmacopœia supplies Opium in rich resource and variety. The Tincture is a popular and convenient form, one grain of dry Opium being contained in $14\frac{1}{2}$ minims of the tincture (Garrod). This preparation expresses in a compendious way the full therapeutic idea of Opium :—its potency in quieting pain, and its disagreeable concomitant effects on the Nervous and Digestive systems. The other preparations of Opium resemble one another in this essential feature —that they contain the same total thing (Dry Opium, or Opium dissolved in spirit or water), and therefore they have parallel therapeutic effects.

In my introductory chapter I spoke of that false philosophy of Pain which led us to think of it as an excess of force, a hyperæsthesia. And this incorrectness of thought and phrase led to an equivalent incorrectness in therapeutic terms. Opium and its congeners were called Sedatives, from the notion that we had to sit upon and press down a creature which was prone to mount upwards—a creature which got angry, and so it was our duty to appease him. Truer views about the nature and quality of Pain lead us to see that its analogies are to be found in quite an opposite direction, and that it is a minus quantity

rather than a positive. Now, if we accept this doctrine as at least provisionally true, it will be a great help to the rational explanation of some of our most trusted remedies. For instance, following this thread of argument, we call Opium a Stimulant; it may save a function from being depressed, and it does so by raising the tone of that function to a higher level. It is a true exalter of power, and it exalts partly by economizing waste of tissue. Opium often cures pain by promoting the nutrition of a starving nerve, and lifting a nerve or nerve-centre from the state in which Pain is possible.

According to Inman and Anstie, then, there are two ways in which Opium may relieve pain: (α) by its use as a Stimulant in small doses, and (β) by its use as a true Narcotic in larger doses. The stimulant effect can be maintained by a judicious repetition of the dose originally given, both as to time and quantity. There is no "re-action" in this method; the ideas which we associate with a familiar (I might say, vulgar) employment of the word "Stimulant" find no place here. Each dose should be relatively small for the circumstances of time and person; and the variable element of idiosyncrasy must be considered also. But events may require and justify the use of Opium in quite a different way; and so it may become a "deadening agent," which diminishes the activity of the Nervous system. The process by which this is done is called Narcosis.[6] The narcotic principle in drugs, says Dr.

[6] On the classico-medical use of the words "Narcosis" and "Narcotics," see Dr. Anstie's "Stimulants and Narcotics," pp. 163—198.

Billing, diminishes the sensibility of the Nervous system, lessens the perception of external objects, and checks volition ; and thus pain is allayed, and sleep promoted.[7] But this author goes on to say in a paradoxical manner that Narcotics allay pain and produce sleep without oppression of brain or increase of pulse : which is precisely the reverse of the truth. Dr. Headland divides Narcotic medicines into three orders, touching on one side the group of Stimulants, and on the other the group of Sedatives.[8] Dr. Anstie boldly (and I believe rightly) abolishes from his classification the special class of remedies called Sedatives, and includes them under other denominations.[9] He describes Narcosis proper as a physiological process in which the nervous system is deprived of its vital characteristics by the agency of a poisoned blood-supply ; and which directly tends to produce general death of the organism by means of such deprivation. Dr. Anstie gives a sketch of the nervous phenomena of Narcosis, and divides them into six classes according to the particular functions of which they indicate the disturbance :—namely, those of Mind, of Sensibility, of Muscular movement, of Secretion, of Circulation, and of Respiration.[10]

I have now roughly delineated the Physiological action of Opium, a thorough knowledge of which is of high importance. It will not be difficult to apply this knowledge to the therapeutic use of Opium, if

[7] "First Principles of Medicine," fifth edition, pp. 88, 89.
[8] "On the Action of Medicines," first edition, p. 223.
[9] "Stimulants and Narcotics," p. 172.
[10] Ibid., p. 175.

we keep the landmarks of Stimulus and Narcosis constantly in view. Most of all is it easy to employ Opium according to this pattern when we have to do battle with the dynamic and physical facts of Pain. Sometimes we are obliged to think most of the remedy, sometimes of the degree and quality of the Pain, sometimes of the exigencies and peculiarities of the pain-sufferer: and in the adjustment of these forces (so to speak) lies the technical skill of the medical practitioner. If the drug seem to fail in its effect, the room is open to enquire—is Opium the right drug to choose? Is it forbidden by the constitutional oddities and delinquencies of the patient? And is it administered in appropriate doses, and at appropriate times?

There are several affections (acute and chronic) of the Head in which Pain is an emphatic symptom, demanding Opium to be given alone or in combination with other medicines. In Cerebral Rheumatism, formerly called Rheumatic Meningitis, Opium will relieve Pain; but as there are usually other more pressing points in the history of a case (as restlessness, convulsion, delirium), the remedy is often better administered in another form (hypodermic injection). Syphilitic meningitis may require, whenever pain is urgent, the use of Opium in combination with a suitable preparation of Mercury. Some acute diseases of the middle and internal Ear, leading perhaps, if unchecked, to inflammatory exudation in the substance, or on the surface of the Brain, are admirably treated by Opium; the pain is soon relieved, and perhaps sooner still if a small quantity of Mercury

be given with each dose. The same thing may be said of a similar condition of the frontal sinuses. The desperate sufferings which attend Cancer of the Brain may be slightly (rarely more) alleviated by the habitual taking of Opium ; but here again the hypodermic administration is generally better. This remark applies to Cancer when it involves the bones and tegumentary parts of the Head, and especially the Eye. Opium may blunt the painful contingencies of Aneurism in the interior of the Head ; but the pain of Cerebral Abscess or Tumour is (within my experience) little controlled by Opium.

In many of these serious cases it is necessary to prescribe Opium in a resolute way, and to persevere in its judicious administration. Suppose a grain of powdered Opium (or its fluid equivalent) to be given to an adult as a first dose :—in most instances it would act as a stimulant, with some trace of Narcosis. Repeat the same quantity at moderate and regular intervals ; for a time the stimulant effect will be fully sustained, and the concomitant narcosis will gradually subside. We aim to reproduce the stimulant action exactly when it seems to be passing away ; and if this should not abolish pain sufficiently to allow sleep when sleep ought naturally to come, then a special narcotic dose should be given *horâ somni*. The narcotic function being fulfilled, we are not on any account to maintain that function during the day hours, as if from a crude notion that a perpetual sleep is a fine thing. For a continuous narcosis would not annihilate the cause or causes of the pain, and it would gravely

interfere with the normal nutritional processes of the body. Whatever blunts or spoils the appetite does *pro tanto* starve the tissues, and hinders the proper purification of the blood.

It appears, then, that Opium exhibits its stimulant effect by the regular administration of moderate quantities, and that Pain can be mitigated to a large extent by this plan. Sometimes Pain is so importunate as to tempt us to repress it—to kill it—by a hasty narcotic dose; but this may act, as Dr. Anstie says, with shock-like vehemence on the great nerve-centres, and destroy their physiological integrity. Nor must we overlook the occasional dangers of even fractional parts of a grain of Opium:—the chief of these dangers is, perhaps, an almost mortal syncope from paralysis of heart-muscle. But it is remarkable that there is no morbid state of heart, whether of wall or valves, which characteristically and absolutely forbids Opium; and it is unfortunate that we have to learn our perils, and the way to elude them, by an experience which is now and then very dearly bought.

The power of Opium to check and cure many forms of Inflammation is quite a proverb; but there are weighty theoretical reasons why the drug should be used with caution when we have to combat inflammation of the Brain and Brain-membranes. Pain is a classical element of all Inflammation, and hence the subject is fairly within the scope of this work. It is alleged with some force that the possible Narcosis which may be produced even by a small dose of Opium

can so mimic the pseudo-narcosis of some brain diseases, that it is unscientific and even dangerous to administer Opium whenever its effects are thus liable to be confused. The rule was laid down with formal nicety—be very careful how you venture Opium in inflammatory diseases which tend to produce death by coma or apnœa; but when the tendency is towards death by asthenia, then the use of Opium, as a remedy for inflammation, is most serviceable.[1] All this is generally true; but the fact should make us try to extract all the good we can out of a medicine, and as little of the concomitant harm. In obedience to this precept, we might give Opium early in the history of a case, when the inflammation is only beginning; we can prescribe the remedy in small and frequent doses; we may combine it with other remedies which are said to keep the injurious effects of Opium within manageable limits. Tartrate of Antimony affords a trustworthy counterpoise to some of the evil qualities of Opium; and we associate this combination with the honoured name of Dr. Graves.[2] Now when I have before me a case which has the clinical features of inflammation within the Head, and marked by Pain as an urgent symptom (Pain rather than Delirium or anything worse in this direction), the question with me is simply this—is the case to be treated with Opium plus Antimony, or with hypodermic Morphia?

[1] Sir T. Watson's "Lectures on the Principles and Practice of Physic," third edition, pp. 240, 241.

[2] Dr. Neligan gives Professor Law the credit of originating this combination of tartrate of antimony and opium. (Dr. Neligan's "Medicines," by Mr. Rawdon Macnamara, seventh edition, p. 440.)

It may be contended that if relief follow, the diagnosis must have been wrong, and that probably the pain was an instance of pure "neuralgia." It may be so; but I describe the practice partly in order to protest against the therapeutic knowledge of to-day being cramped by weak traditions and worn-out creeds.

Now it happens that Nature kindly obtrudes on the surface of the body an organ in which we can leisurely watch the phenomena of Inflammation. The structures of the Eye are often inflamed, and Pain is an invariable accompaniment of that condition; we give Opium to appease the pain, and we find that we quell the inflammation at the same time. The storm of nerves (pain) having been soothed, the storm of vessels (blood-shot weeping conjunctiva) subsides little by little; the eye being sealed up enjoys physiological rest, and nerves and vessels return gradually to normal state and function. Long before the introduction of Atropia into the Eye was insisted on by the best ophthalmologists, it was my custom to trust mainly, if not entirely, to Opium in the treatment of superficial inflammation of that organ (I now almost always use Morphia); and we are indebted to the late Mr. Z. Lawrence for recommending and explaining the practice.[3] We are not concerned now with any symptom of Inflammation but the pain. But while the patient thinks most of the pain, the physician thinks most of the structural damage of which Pain is an index; in other words,

[3] *Medical Times and Gazette*, Dec. 31, 1859.

the physician is looking into the future while the sufferer is engaged by the agonies of the present. No means should be neglected which may co-operate with the Opium treatment; and even when no acute pain exists, we strive to mitigate those irritabilities which are related to Pain as shadows are to substance. When we come to discuss Morphia in its proper place, I shall describe the best mode of administering it for inflammatory pain, and show the superior value of comparatively small and frequent doses.

The services of Opium are needful for the pain attending sundry other inflammations about the Head, and in or about the canals opening on this part of the surface of the body.

Toothache is one of the troubles of tegumentary organs the acuteness of which is relieved by Opium taken internally. If the pain come from congestion or inflammation of the tooth-fang, then Opium may cure the Inflammation and the Pain too; but if, as is often the case, there be decay of the tooth itself, the chirurgical appliances of the dentist are necessary.

The Chest is afflicted with Pain in a multitude of ways. Inflammation of the Pericardium is always characterized by pain: at first there may be only "uneasiness" or "oppression," but this generally develops into real darting pain, which is increased on a full inspiration and by pressure with the fingers in the intercostal spaces. And sometimes there is very "sharp pain, almost resembling a paroxysm of angina, shooting through the chest to the scapula, or upwards to the

clavicle or the left shoulder."[4] Pain is a less prominent symptom of Endocarditis than of Pericarditis, and there is seldom much distress of breathing.[5] Up to a very recent time, Mercury was thought an indispensable adjunct to Opium, and he was counted a bold (if not a rash) man who ventured to prescribe the Opium without the Mercury for active Pericarditis.[6] Dr. John Taylor, of Huddersfield, was among the first who impugned the traditional teaching;[7] and he was supported by Dr. Risdon Bennett and others.[8] But even so late as twelve years ago, the new doctrine had made little progress; and it is only since Inflammation has been studied more from its neurotic side, that greater trust has been put in the therapeutic virtue of the vegetable than of the mineral. But, irrespective of all theories of Inflammation, it is only natural that we should strive to give as much quiet as possible to an organ which never really rests; the physiological *rôle* of the Heart is to be ever moving; but we may try at the very least to make it more restful. Everything physical or emotional which quickens heart-action during inflammation, must make the symptoms of that inflammation, *quoad* pain, more hard to bear. Now Opium, by blunting the sensitive-

[4] "A Treatise on Diseases of the Chest," by Dr. H. W. Fuller, p. 524.

[5] Dr. Fuller, *op. cit.*, p. 554. An interesting point seems to be established by the united observations of Dr. Habershon, Dr. E. L. Fox, and Dr. R. Thompson, that temperature is elevated comparatively little in serous inflammations when compared with that in inflammation of mucous membranes.

[6] Dr. Fuller, *op. cit.*, p. 538.

[7] See papers published in the *Medical Times* for 1849.

[8] Dr. Fuller refers to a paper by Dr. Bennett in the *Lancet* for Dec. 6, 1851; but there is no paper by Dr. Bennett in this number of the *Lancet*.

ness of the Nervous system, makes nerves less capable of being influenced by physical and emotional agencies, and therefore less capable of conveying pain. And, though it is beside the specific object of this work, it cannot be amiss to point out that this therapeutic process tends to protect the heart-structures from permanent damage.

Neuralgia of the Cardiac Plexus,[9] producing what was formerly called *Angina Pectoris*, is often pacified by the prompt *quasi*-narcotic action of Opium. Forty to sixty minims of laudanum, or of the *liquor opii sedativus*, or of *acetum opii*, should be given immediately, sometimes combined with other efficient remedies. Smaller doses of Opium may be administered at regular intervals afterwards; as 3 grains of the compound soap pill, 5 grains of the compound ipecacuanha powder, or 2 fluid drachms of the compound tincture of camphor. Most physicians would agree about the paramount excellence of Opium for acute Cardiac Neuralgia; but it will be seen by and by that there are other means of reaching a more permanent therapeutic result.

In Pneumonia, there is always some pain, or a distress which borders upon it; and although theoretical reasons have been assigned why Opium ought not to be prescribed, yet here again practice is better than theory, and a *f* ℥ss. dose of compound tincture of camphor

[9] We are returning with confidence to the views of Laennec, who considered *Angina Pectoris* to be a variety of Heart-neuralgia. Dr. John Mason Good called the disease Sternalgia, or Suffocative Breast-pang; and it was termed Sternocardia by M. Brera, an Italian physician (at Verona) who wrote in 1810. The value of opium and camphor is mentioned by Dr. Copland in his "Dictionary of Practical Medicine," but not with much emphasis.

(=gr. $\frac{1}{8}$ of opium) to an adult every three or four hours, with reputed diuretics and diaphoretics, is most efficient for the alleviation of suffering. And in approaching the inflammation of another viscus from the nerve-side, we discover a further illustration of the doctrine that in humanely seeking how to quiet pain, we at the same time assist to a favourable termination those pathological processes which make up the inflammation. A judicious medical man will act with caution, and be guided by the important factor of the bulk of lung inflamed; for a "double pneumonia" may indirectly cause so much disturbance of brain-function that Opium is entirely inadmissible. But it is a gain to be liberated from the scholastic notion that Opium ought never to be given in any case of Pneumonia; and my clinical experience attests in a decided way the benefit of its proper stimulant action.[10]

Very early indeed in the history of a case of Pleurisy ought we to combat the pain by Opium. Authorities differ about the best form of Opium, and hereafter I shall quote a good name in favour of the hypodermic use of Morphia;[1] but it is a sound practice to administer one or more grains of powdered opium at the beginning and to persevere with it so as to maintain a mild

[10] Dr. Hughes Bennett shows a righteous zeal against the blood-letting and mercurial treatment of Pneumonia, but I do not find that he recognizes the utility of the "stimulant" qualities of Opium ("The Principles and Practice of Medicine," third edition, 1859).

[1] If we desire an example of the progress of Therapeutic Art, we may compare the treatment of Pleurisy advised in Dr. Barlow's Manual (Churchill, 1856), and that advised by Dr. Anstie in Reynolds's "System of Medicine" (pp. 939—943).

narcosis. For the pain of acute inflammation of a serous membrane is one of the most pressing exigencies of mortal suffering; and if we strip away all the adjuncts of traditional teaching, we shall come to Opium as the root and core of the whole treatment. And, as in the case of the Heart, Opium favours economy in the expenditure of physiological force; it diminishes the necessity for respiratory movements, and the less movement there is of chest-wall, the less will be the pain. So that we encourage the cure of Pleurisy by the means taken to subdue the pain of Pleurisy.

The sudden severities of Pneumothorax require a very unsparing use of Opium, but often hypodermic Morphia is preferable.

The final stage of Cancer of the Lung is characterized by extreme pain and restlessness, especially during the night. Before the introduction of hypodermic Morphia, there was no adequate medicine but Opium, which was obliged to be administered in full narcotic doses in order to bring even partial relief. And there are multitudinous shades of minor distress for which the continuously stimulant action of Opium is still the proper remedy. Very nearly the same remarks may be made of the palliative treatment of Intrathoracic Aneurism. The pressure-symptoms may be exhibited chiefly in the forms of Neuralgia and of Dyspnœa; and the free internal use of Opium is sometimes the only means at our disposal. And there is nothing more to be said of the casual pains of Mediastinal Abscess.

What shall we call the difficulties and struggles of

Asthma? Not Pain in the strict sense of the word; but anything which interferes with the due aëration of the blood must produce a distress which is more immediately mischievous than pain, because it more interferes with vital function; and is, in fact, more decisively resented by Nature until at least partially relieved. The same thing must be said of the various forms of dyspnœa secondary to other diseases; of the suffocative pangs of diphtheria and croup; and of the deep agony of cardiac thrombosis and embolism. All these morbid states are so many physical obstacles which bar the access of air to the blood, or of blood to the air. The trouble of Asthma is usually capable of decided alleviation by Opium and its derivatives, and more often by the derivatives than by the crude drug. That extreme sensitiveness of the beginning of the Respiratory tube which constitutes *Laryngismus Stridulus* may be slightly deadened by the same means, though other measures are required to cure it. There are many minor contingencies attending the great constitutional disease called Consumption, which, so far as they affect the Chest, may be relieved to a great degree by the wise administration of the preparations of Opium. Cough is a common symptom of Pulmonary Consumption, and is a convulsive act which worries rather than pains; but Pain may be an indirect result of the vibratory violence of the cough, and its secondary action on other functions. Now Opium is a popular and sovereign remedy for Cough, and facts quite justify its reputation; for although Cough is a common factor of a number of

diseases and disorders, yet it is always capable of being controlled or removed unless it depends on an incurable malady. Opium is a grand medicine for the acute suffering of Laryngeal diseases, especially when dependent on Phthisis or Cancer: and it is needed for the miseries of Dysphagia, when that term means not only difficulty, but pain, in Deglutition.

I pass to the subject of disease in the Abdomen; and we have only to study any monograph to find that the Therapeutic history is, in a large degree, a song of the triumphs of Opium.

Pain in the Stomach arises from various conditions, classified thus by Dr. Wilson Fox: (*a*) from the presence in its interior of foreign substances of an irritating character; (*β*) from organic diseases altering the anatomical structure of its coats; (*γ*) from perversion of innervation.[2] It is not at all easy to distinguish a pure neurosis of the Stomach from the pain caused by some organic disease, even with the valuable aids to diagnosis supplied by Dr. Fox, who says that the utility of Opium in painful affections of the Stomach can be scarcely over-rated, and that a single dose may permanently relieve pain of many days' duration.[3] "It is of special use in Gastrodynia arising from anxiety and exhaustion, but its value is not inconsiderable in many hysterical cases."

In no pathological state is Opium more valuable than

[2] Reynolds's "System of Medicine," vol. ii. p. 787.

[3] *Op. cit.*, p. 838. In an instructive chapter on subacute Gastritis, Dr. Brinton advises the watery extract of Opium as a good remedy for the pain. ("On Diseases of the Stomach," p. 111.)

in chronic Ulcer of the Stomach. It should be administered in such a way as to maintain its stimulating pain-abolishing effects with as little narcosis as possible, namely, in small and frequent quantities. It should be withdrawn by degrees, or tentatively given at longer intervals, directly we have reason to believe that the healing of the ulcer is going on in a satisfactory way. No plan so powerfully contributes to the healing of gastric ulcer as the combination of rest to the stomach by feeding solely *per rectum*, and the steady administration of Opium; and here we again encounter the happy fact that dysæsthesia is blunted and the physiology of healing is promoted by identical measures.[4] When perforation of the Stomach has occurred, and the symptoms (the chief of these being pain) of Peritonitis are developed, there is a bare chance of life being prolonged by giving Opium freely, as long ago recommended by Drs. Graves and Stokes, and endorsed by Dr. Habershon:[5] a grain should be given at first every hour, either as a powder which can be washed down by a little cold water, or mixed with vegetable extract into a very small pill.

For the Pain of Cancer of the Stomach, Opium is the only medicine worth mentioning; though I shall show hereafter the superior value in most instances of Hypodermic Morphia.

Pain is associated with the morbid state technically

[4] Dr. Brinton reminds us of the analogous benefit from Opium in the management of surgical ulcers. (*Op. cit.*, p. 221.)

[5] "On Diseases of the Abdomen," second edition, p. 154.

called "Stenosis of the Cardia," or stricture and obstruction of the Cardiac orifice of the Stomach. Irritability is the appropriate name given to the local nerve-derangement mixed up with some varieties of chronic Dyspepsia:—it often merges into pain or (what would be called by some sufferers) spasm. In order to relieve a sudden attack, Dr. Brinton prescribed Opium in solution;[6] while to prevent or alleviate severe habitual pain after meals, a pill of the extract of Opium should be taken at such a time before the attack as allows the effect of the drug to anticipate the pain. Dr. Brinton adds that few forms of "sedative" are more generally useful than the Compound Kino Powder in combination with a salt of Bismuth; and I recommend with equal emphasis the Compound Ipecacuanha Powder combined with Nitrate of Silver, and administered as a small pill immediately after food.

Most authors speak of the danger of Opium taken as a medicine developing into Opium consumed as an evil habit; and this danger is perhaps most imminent when the drug was begun originally for Stomach-troubles. The "pseudo-dyspeptic symptoms" of Hypochondriasis are very deceptive, and Opium once prescribed for these by medical authority may be continued without professional sanction to an alarming degree.

The diseases of the Duodenum which are accompanied by Pain require the unflinching administration of Opium. Between these diseases and those of the Stomach there is a marked pathological parallelism.

[6] *Op. cit.*, p. 393.

Enteralgia is a disorder which has been recently identified with some distinctness:[7]— it is a painful affection of the Intestines, of neuralgic character, generally associated with constipation and flatulence. What are called "antispasmodics" are commonly prescribed for this disorder, but Opium is a necessary basis for any sort of successful treatment. Except by the use of the clinical thermometer, it might be difficult sometimes to distinguish Enteralgia from Enteritis; but, so far as the pain is concerned, our duty is the same. The existence of inflammation suggests that the "quiescence of parts" should be promoted by Opium, which at the same time relieves the pain; but in nearly all cases there are better ways of administering the medicine than by the mouth, on account of the constant vomiting. If Opium be given by the mouth at all, I would prescribe it in the form of gum of opium, prepared as very small pills. The grand point is, as Dr. Bristowe says,[8] that the patient should be got well under the influence of the drug and should be *kept* under its influence.

Obstruction of the Bowels is the generic title assigned to a morbid state, the degrees of which range from an aggravation of habitual constipation to an insuperable barrier to any evacuation of the bowels. It is an important business of the physician to determine, if possible, the existence or non-existence of organic (and

[7] See monograph by Dr. Wardell, in Reynolds's "System of Medicine," vol. iii. p. 47.

[8] Reynolds's "System of Medicine," vol. iii. p. 65.

incurable) mischief; but whether this point can be established or not, the secondary symptoms of pain and spasm are always trustworthy guides to the administration of Opium. Quite a number of well-attested cases are on record in which nothing else was done, *quoad* medicine, and in which, nevertheless, a satisfactory removal of the obstruction was effected without surgical interference.

The acute severities of internal Strangulation, and of Intus-susception of the Bowel, may be fittingly met by the generous allowance of Opium, while other suitable methods of treatment are being devised. Ulceration of the bowel is often attended by "violent and frequent peristaltic movements and writhings," which can be properly mitigated only by Opium. In the same manner we can best ward off the pains and perils of those sub-inflammatory conditions known as "Typhlitis" and "Peri-typhlitis."

Case 1.—A young lady, born in 1843, had between 1862 and 1868 a series of attacks of sub-acute inflammation of the Cæcum, with pain in the right iliac fossa. These attacks were accompanied by constipation, and seemed always to be provoked by a meal of indigestible food. Experience taught that the best way of treating these attacks was by absolute rest in bed, and by the steady administration of one-grain doses of Opium, at first every two hours, then at longer intervals. She would rarely allow even the use of an enema, but hot fomentations were applied to the painful part. The pain always gradually went away, and the bowels then

acted of their own accord; it was seldom even necessary to order a simple dose of castor-oil. This case exemplifies the fact that alleviation of Pain is sometimes the true key to the restoration of function.

The torments of Colic require the full and early administration of Opium. Several other measures are useful and essential auxiliaries; but while the physician is thinking most of obtaining an evacuation of the bowels, the patient craves most urgently for the alleviation of Pain. It is a good plan to combine laudanum with a laxative like caster-oil; we may soothe and remove obstructive *excreta* at the same time. This method has many supporters in the treatment of Dysentery; though the special agonies and tenesmus of this disease may demand more often the use of Opium alone (or combined with Ipecacuanha). There are some surgical troubles of the Rectum and Anus which are exceedingly painful, and for which, so far as the quieting of pain is concerned, we can do nothing without the help of Opium; but usually there are more advantageous ways of introducing it than by the mouth. This remark applies with especial precision to Cancer of any portion of the Intestinal Canal.

The bare mention of that terrible disease Peritonitis, is suggestive of the siren lullabies of Opium. A rather sanguinary depletion is still upheld as the classical manner of dealing with acute (so-called idiopathic?) Peritonitis;[9]—at the very outset I declare that I do

[9] See Dr. Wardell's Article on "Peritonitis," in Reynolds's "System of Medicine," vol. iii. pp. 240–241.

not believe a word of it. A grief it is to remember now that once I not only believed this doctrine, but acted upon it; and very superfluous I hold it to have been both as regards the pain, and the pathological processes connoted by the pain. Not "*after* the abstraction of blood," but altogether in the room of it, may Opium be given promptly and eagerly; not doled out in penurious weight and measure, but distributed liberally and rejoicingly according to the exigencies of the sufferer. As soon as the disease is announced by its unmistakable signs, let two grains of powdered Opium be given at once (if we decide in favour of this plan rather than the hypodermic use of Morphia); the sequential diaphoresis is a good test of the efficacy of the medicine. The administration of Opium must be sustained to the point of moderate Narcosis; for by deadening sensibility we lessen peristaltic movement, and whatever lessens peristaltic movement must help to diminish pain. Economy of motor force is here, as elsewhere, economy of sensory force. But there is a collateral reason for copiously giving Opium (or its derivatives) in acute Peritonitis, which deserves particular comment though not specified in text-books of Medicine. Opium is, as Dr. Anstie remarks, a powerful "food-stimulant;" that is to say, it takes the place of food not merely by blunting the food-appetite, but by saving *pro hâc vice* the necessity for food. Now the less food there is put into the digestive canal, the less must be the functional activity of that canal, and the more quiet it will be kept, anatomically and physio-

logically. And yet we have no reason to infer that the system suffers in its nutrition to any serious extent; while the very rest which Opium brings prevents that wear and waste of tissue which is an ultimate cause of the demand for food.

Strumous peritonitis, or Tubercle of the peritonæum, is most beneficially treated with Opium. Constant pain, not necessarily associated with constipation or diarrhœa, is a frequent characteristic of this slow disease.

Case 2.—A girl, æt. eighteen, daughter of a tradesman, was ill during the spring and summer of 1858 with chronic peritoneal inflammation. The belly was swollen, and there was obviously some effusion into the peritoneal sac. The pain became distressing, and seldom varied. She was kept in the recumbent posture, permitted to have only liquid food, and she took one grain of Opium three or four times a day. This treatment produced infinite comfort, and probably prolonged life. She died in the autumn of the same year.

Within the Abdomen are two seats and sources of sudden and terrific pain. The passage of bile-stones through any of the liver-ducts, and of urinary-stones through the ureter, is signalized now and then by a neurosis which may be called with propriety a "nerve-storm" in its effect upon the system. To quell this "storm" is the happy privilege of the doctor, and he can do this sometimes with notable promptitude and success. Now it is certain that if, *quoad* Opium, our only resource is to administer it by the mouth, there is

the considerable risk that the very acuteness of the pain may clamour for a dangerous quantity of the medicine. For the moment it may seem that only a quick and complete narcosis can blunt the pain; and so the inexperienced medical man rushes to produce this narcosis, forgetful of the new dangers which he may thereby bring. But it is not a high philosophy to poison a patient in order to cure his pain; indeed, the poisoning process thus described has not seldom had a mortal result. We shall see hereafter that it is better to prescribe Morphia, and better still to use it in the hypodermic way.

There are a number of painful troubles relating to the Uterus, some of which are physiological, some pathological. The errors of physiological processes often involve pain to an excruciating degree. Dysmenorrhœa is divided by obstetric authors into the neuralgic, inflammatory, and congestive varieties. For the neuralgic form of Dysmenorrhœa, Dr. Churchill says that our principal reliance must be upon "Opium, which may be given in grain doses every second hour, commencing with the first sensation of pain in the back, and continued until relief is obtained."[10] Dr. Graily Hewitt seems to discourage the use of Opium, but I know no efficient substitute.

Case 3.—An unmarried lady, æt. twenty-five, had suffered from girlhood what seemed to be a "neuralgic dysmenorrhœa." She had enjoyed skilled medical advice, and it seemed likely that the cause of her

[10] "On Diseases of Women" (Dublin, 1857), p. 165.

suffering was a mechanical obstruction at the uterine outlet. Previous to making any physical examination, a provisional diagnosis was made that the dysmenorrhœa might be neuralgic; and at the first twinges of pain which denoted that the next menstrual period had come, I administered 30 minims of *Liquor Opii*,[1] the dose being repeated at intervals of four and six hours. The treatment was very successful, and verified the diagnosis; the menstrual flow continued for the normal period, and the health greatly ameliorated, partly by the dread of the recurring anguish being removed. A repetition of the same plan for the next two or three months saved the necessity of any more medicine being taken; and menstruation gradually became quite natural. This case was under my care in the spring of 1872.

My experience favours the doctrine that no remedy but Opium is beneficial in this and analogous cases; other medicines may be combined with it, but they are entirely subordinate in therapeutic value. Indeed, it may be said that the treatment by Opium, pure and simple, is the paramount method for acute neuralgia of nearly all internal organs. Pain may be a casual event in the history of congestive and inflammatory dysmenorrhœa, admitting of relief by some preparation of Opium.

The pain of Puerperal Peritonitis is remarkably under the control of Opium, and the course of the disease cannot be favourably modified unless this control be

[1] A valuable preparation, made by saturating the gum of Opium in diluted acetic acid.

fully exercised. It is folly to talk of "doing good" to this form of peritonitis so long as excessive pain is unrelieved: and this remark applies with equal pertinence to inflammation of any of the uterine appendages.

The acute inflammation of the Uterus described by Dr. Graily Hewitt[2] (Hysteritis of Dr. Churchill) usually requires a very liberal administration of Opium. Collapse may be warded off by the physiologically stimulant qualities of the medicine.

The so-called Spasm of the Uterus and of the Vagina ("Vaginismus") may demand internal medication by Opium or its derivatives; but I shall have an opportunity of relating the advantages of the local use of Opium in these cases. The distressing malady of Cancer of the Uterus merges into the larger question of Cancer as a constitutional disease, the management of which, so far as pain is concerned, will be discussed hereafter.

Phlegmasia Dolens is almost proverbially associated with the puerperal condition, and pain is a characteristic feature. I have had many cases of this disease under my care; and I have nearly always prescribed Opium in the form of the powdered drug made up into a pill, which is taken every two or three hours according to the urgency of the suffering. A paper was published a few years since by Dr. Clark, of Oswego,[3] on the treatment of *Phlegmasia Dolens* by Opium: Dr. Clark says

[2] In his work on "Diseases of Women."

[3] *New York Medical Record*, June 1870.

that he uses Opium and nothing else, and speaks of Opium curing *Phlegmasia Dolens* with more certainty than Quinine cures ague. Denman recommended the combination of Diaphoretics or Diuretics with Opiates ;[4] and the simultaneous use of local means is of course a great assistance.

The administration of Opium for Pain, as part of the physiology of Parturition, involves one of the most delicate problems of Therapeutics. It would be a blunder of the first magnitude, and which no scientific practitioner would commit, to try and deaden this pain by any process of so-called narcosis ; up to a certain point Pain is an expression of motor energy and power. The ordinary and rational formula would therefore be—the greater the pain, the sooner will the parturient process be over. But Pain may be a symbol of weakness as well as of strength ; motor force may be nearly or quite exhausted, and yet pain may continue. Accepting this fact as a signal for action, we say—let us soothe pain, and we shall give time and opportunity for a recovery of motor force. The sensory centre having rest makes the motor centre have rest too ; the motor energies are quickened by repose : and eventually the parturient function may be hastened rather than delayed. I have tried to make clear a point of practice on which I have acted for twenty years, and an exposition of which is thus given by the late philosophical obstetrician, Dr. Tyler Smith. "When labour is arrested in mid-course, or towards its ter-

[4] "Introduction to Midwifery," p. 509.

mination, the uterus and its associated muscles often begin to act again after a short interval of rest. In cases of this kind, great good is sometimes done by a full opiate, particularly in cases where the preliminary part of the labour has been tedious, and the patient has been long without sleep. After a few hours' rest, the uterus will resume its work with energy; and the patient, refreshed by repose, will go on favourably to the termination of labour."[5]

But after Labour is over, the Uterus may be teazed with what are called After-Pains, which are, as it were, the stormy ripples left by the commotion just gone by. Not less disturbing are the spasms of the Uterus provoked by the retention of clots of blood, shreds of membrane, and the like. Certain manual proceedings may be necessary to help a patient in her trouble, but Opium is a grand resource both to prevent and to cure. The practitioner who never leaves a woman just delivered without administering a dose of Opium, will now and then save her a host of difficulties, and anticipate many painful complications.

In a case of Rupture of the Uterus, after extraction of the child, it will be wise to administer Opium in large and repeated doses, to avert (if possible) that desperate collapse which is the special product of the fearful pain.

There are sundry pains and perils contingent upon diseases of the Bladder, Prostate gland, and Urethra, which the instincts of the Surgeon teach him to treat with Opium. Inflammatory catarrh of the Bladder

[5] "Manual of Obstetrics" (1858), p. 458.

brings in its train much wretchedness and loss of sleep: and the so-called "irritable bladder" may be harder to bear than actual pain. In addition to the local use of Opium, the medicine may be often given internally with much benefit in small and frequent doses. The utility of Opium is unquestionable in allaying the agonies of spasmodic stricture of the urethra; or rather of the retention of urine which arises from the existence of such stricture. Here we observe the same sequence of events which so often happens in other parts of the body:—the mitigation of pain moderates spasm of muscle, and moderation of spasm of muscle mitigates pain. Which is cause and which is effect may be not always clear, but our therapeutic duty is not the less peremptory.

For the penetrating and almost constant agony of Stone in the Bladder, we may be compelled to administer Opium in many forms until the time be ripe for undertaking the proper chirurgical operation.

Acute inflammation of the Testis is usually accompanied by pain of a very intolerable type. But I know no defined and localized mass of inflammation so thoroughly under medical control, provided that we begin the treatment early enough; for we may prevent pain by not letting the inflammation run on to that stage which is the proximate cause of the pain.

Case 4.—In April 1869, I was summoned about twelve miles to see a young man, about twenty-two years of age, who was suffering very acute (left) orchitis, the result of a blow a few days before. The inflammation

was as yet in the early stage, but the pain was becoming more severe every hour. Suitable local applications being devised, I prescribed 20 minims of Antimonial Wine with 2 minims of Tincture of Opium in an ounce of Spearmint Water. This draught was repeated every hour for twelve hours, and then gradually at longer intervals. The success of the treatment was complete. Pain was relieved simultaneously with the establishment of a profuse diaphoresis: the pathological process which constitutes inflammation was first checked and ultimately stopped. Within three days the man was virtually well. I value the history of this case as an illustration that one drug may materially help the action of another.

Hernia is a generic term which includes a number of anatomical species; and for the pain which is necessarily associated with some morbid conditions of bowel, Opium has been from time immemorial a supreme remedy. And the Surgeon thinks of this remedy for another reason; he knows that if he can relax muscular spasm, he may reduce the Hernia; and when the Hernia is reduced, the pain may be no longer felt. It would be easy to discourse in a learned way on the mutually reflex aggravation of Pain and Spasm: but here as elsewhere I deal with the fact as affording suggestions for skilful therapeutics, and for placing our treatment on a scientific basis. In a surgical malady it is possible that the Surgeon might wish to give Opium for one reason, and the Physician for another: nevertheless, both are aiming at the same mark.

To discuss properly all the painful Surgical diseases and accidents for which Opium may be useful, would be to write an Encyclopædia of Surgery, or at least a Surgeon's Vade-Mecum. But I may enumerate some points in which a surgeon should be also a "wise physician." The clinical history of Aneurism abounds with casualties of a painful kind; sometimes they are irremediable, but often they admit of palliation. The results of Thrombosis and Embolism are notoriously a fruitful cause of extreme suffering. Numerous, too, are the affections of Bones and Joints calling urgently for relief from pain. The sequel of Dislocations and Fractures is in some instances Pain, in others "Irritation." Wounds of all sorts, incised, lacerated, gunshot, and poisoned, demand medical protection to the body from the consequences of pain and shock; and this principle is equally true of the wounds caused by necessary surgical operations. Dry and moist Gangrene, many forms of Ulcer, Contusions and Bruises, and the ulterior effects of extreme Heat (burning and scalding) and Cold (freezing), may produce serious changes in the economy by reason of the accompanying pain. In every one of the cases now specified the medical attendant may do wonderful service by the judicious administration of Opium; and if not by the mouth, then in other recognized ways.

After the immediate effects of the mineral and vegetable irritant Poisons have passed off, Pain frequently remains as an expression of the mischief done to organic tissue. Along with other soothing measures,

the internal use of Opium is sometimes most necessary and advantageous.

The course of Abscess, Carbuncle, and Erysipelas, is now and then complicated with severe pain, either from tension of neighbouring structures or from pressure on nerves; and here again Opium given internally may greatly assist other means.

I now turn to some Constitutional diseases which nearly always have Pain as part of their natural progress; and in prescribing Opium for relief of the pain we often most beneficially control the course of the disease. According to the predominance of so-called humoral or neurological views, will be the governing principle of our treatment. The disciple of the one school thinks most of the "secretions," the *materies morbi*, and how to cleanse the blood of peccant stuff; the disciple of the other school is most ready to appeal to the Nervous system, its restraining and restorative power. The pathological pendulum swings from side to side, and unfortunately the therapeutic pendulum swings too. The hardest dogmatist, however, must acknowledge the universality and authority of Nerves, and admit that they represent a force which cannot with safety be passed by. And whether this view correspond with our own doctrine or not, it is certain that our patients will expect us to minister to their immediate comfort.

In Acute Gout, the question has been asked—are we to give "direct anodynes?" Notwithstanding the opinions of Cullen and Sydenham, ratified seemingly

by Dr. Garrod,[6] I think that "direct anodynes" are extremely useful in some phases of acute Gout. Having begun with some purgative or "eliminative" treatment, a modified "eliminative" plan can be carried out during the day, while an opiate anodyne may be administered at bed-time. There are few cases in which the Compound Ipecacuanha Powder is more useful: in relieving pain it removes that irritability which is so adverse to the favourable progress of the disease. There are many instances of chronic and asthenic Gout in which Opium is of immense utility; "irregular" Gout attacks the viscera (especially the Stomach and Bladder), and produces pain the severity of which is subdued only by Opium, applied locally or administered internally.[7]

Acute Rheumatism is a disease the *penetralia* of which we have yet to explore. It is impossible in this place to rehearse all the evidence in favour of the neurological theory of Rheumatism: that evidence shows itself in little things, such as the paralysis of vaso-motor nerves exhibited in rheumatic erythema, and in tiny transient patches of skin-congestion occasionally seen in the history of chronic rheumatism. We cannot doubt, however, that the Nervous system is more completely engaged by some attacks of Rheumatism than by others; for the pain is often proportionately greater than can be explained by the nature and extent of the parts involved. But no fancy scheme of thera-

[6] "The Nature and Treatment of Gout and Rheumatic Gout" (1860), p. 375.

[7] Dr. Todd's "Clinical Lectures on certain Diseases of the Urinary Organs; and on Dropsies" (1857), p. 375 and p. 429.

peutics must keep us from vigilantly attending to the objective symptom of pain, and meeting it in the most effective manner. Dr. Dover originally prescribed the Compound Ipecacuanha powder, in doses of ℈ij to ʒj or more, and Dr. Craigie never ordered less than ℈j or ʒ ss of the same preparation.[8] The Opium treatment of Acute Rheumatism has been revived in recent times by Sir D. Corrigan and Dr. Sibson, who say that in order to obtain proper results, the solid Opium must be given in two-grain doses every one or two hours, until the patient finds the pain abated; after which it must be continued according to the degree of suffering.[9] I give Opium according to this method with much confidence, and usually with remarkable benefit. So far from Opiates acting "merely as palliatives" and having "no direct influence on the progress of the disease" as is maintained by high authority, I believe more and more that the course of the disease is modified, possibly shortened, and that cerebral complications may be altogether prevented.[10]

Different stages of that pyæmic malady, called Gonorrhœal Rheumatism, require Opium for the alleviation of pain.[1]

[8] Dr. Craigie's "Pract. Med." Art. "Rheumatism," p. 567.

[9] Quoted in Dr. Nevin's "Translation of the New London Pharmacopœia," 1851, p. 680.

[10] In a volume of Hospital Reports published some years ago, there are recorded some cases of Acute Rheumatism which were, for the sake of experiment, treated with as little medicine as possible. Within certain bounds such experiments are perfectly lawful, though they may be not always agreeable to the patients. But when Pain is concerned, I doubt the lawfulness of any therapeutic experiment which does not at least aim to mitigate the pain, whatever else may be attempted.

[1] Reynolds's "System of Medicine," pp, 924 and 925.

The treatment of the pain of Acute and Chronic Rheumatoid Arthritis will be considered presently.

Opium does good in Syphilis, not by altering the constitutional essence of the disease, but by abating the pain which is one of its most common incidents. What else can we do before so-called "specific" medicines have time to produce their specific effect?

The large question of the external neuralgias, including myalgia, will be discussed under the therapeutic head of Morphia.

The Acute Specific Fevers have now and then painful casualties which demand an Opiate treatment.

The value of Opium is enhanced, and its quantity economized, by combination with other medicines. I have got some excellent results by adding Bromide of Potassium to Opium; and the addition of Belladonna to Opium sometimes enables us to obtain the most good out of each drug with the least harm. Dr. John Harley says that the addition of Henbane to Opium produces the best possible hypnotic action;[2] and this is important, because it is sometimes through the sole agency of Sleep that we get rid of Pain. And it is a point of scientific practice to combine aperients with Opium to obviate (so far as we can) its constipating effects.

Finally, one of the chief blessings of Opium is to help us in granting the boon of a comparatively painless death. There are several diseases in which the misery of Dying adds a heavy item to a long list of troubles;

[2] *Medicat Times and Gazette*, April 4, 1868. On the combination of Chloroform and Opium, see *Glasgow Medical Journal*, May 1869.

and here we may, without extinguishing consciousness, take away the sharp edge of suffering, and make the departure from this world less full of terror. It requires a nice judgment to fulfil this duty properly; and the facility of accomplishing it varies infinitely with the nature of the disease and the temperament of the sufferer.[3]

(2) Morphia may be called, for all therapeutic purposes, the essential principle of Opium. Dr. Garrod says that Morphia gives to this drug most of its valuable properties: "at the same time it, as a rule, acts more agreeably, having less tendency to produce headache and nausea; it is also much less stimulant in its operation. . . . The different salts of morphia act in the same manner, when estimated by the amount of alkaloid contained in them."[4]

In relating the capabilities of drugs to allay Pain, it would be wearisome and quite superfluous to travel over the identical ground that I have gone through when writing of Opium. Opium is a typical remedy in the immense therapeutic area which it covers; in this respect it is quite matchless; but over some part of that area it is of inferior utility to other medicines. In examining the therapeutic character of these medicines,

[3] De Quincey, who has given us so honestly the "Confessions of an Opium-eater," declares that "simply as an anodyne it was, under the mere coercion of pain the severest, that I resorted to Opium." "Most truly I have told the reader, that not any search after pleasure, but mere extremity of pain from rheumatic toothache—this and nothing else it was that first drove me into the use of Opium. Coleridge's bodily affliction was simple rheumatism. Mine, which intermittently raged for ten years, was rheumatism in the face combined with toothache."

[4] "The Essentials of Materia Medica and Therapeutics" (1864), p. 161.

my best plan will be to indicate their special value and importance, and the particular domain of Pain over which each possesses some antidotal efficacy.

Now it is in the Neuroses proper, commonly called Neuralgia, that Morphia mostly shows its victories. I incline to the opinion that the huge and unexpected benefits which have arisen from the hypodermic use of Morphia, have unfairly overshadowed the service rendered by the same medicine when given in old-fashioned ways. Dr. Anstie says justly that Opium as used against Neuralgia, is fully represented for every useful purpose by Morphia; but he contends that the gastric administration of Opiates can, after all, be considered only as palliative.[5] This conclusion seems to be stated in too absolute a form. In many cases there are insuperable impediments to the regular performance of any hypodermic operation; the patient's relatives and nurses have not the requisite courage or skill, the doctor is too far away, or the small short pang of needle-puncture cannot be borne. Graver abuses seem to arise out of hypodermic Morphia, than when the medicine is given by the mouth in the usual manner. It is the custom to portray the many disadvantages which may attend the habitual administration of Morphia; but provided that the quantity taken be within moderate bounds, and not irregularly increased on account of a supposed loss of specific effect, the medicine agrees with most persons unexceptionally well. An "average dose" at bed-time is followed by no thirst, or headache, or con-

[5] Reynolds's "System of Medicine," vol. ii. p. 747.

stipation; the whole therapeutic energy of the drug seems to be expended in the dynamic disturbance of the Nervous system, for sleep is produced and pain is appeased.[6]

Facial neuralgia is more controllable by Morphia than most other varieties of neuralgia; three or four small doses of the medicine may be given in the course of the day, and a larger quantity at night. The practitioner will, of course, satisfy himself that he has to deal with a nerve-pain which does not originate with decayed or decaying teeth. Pleurodynia[7] is admirably treated (*experto crede*) with a single purgative dose of calomel, followed by a few adequate doses of Morphia. A combination of calomel and morphia is exceedingly good for the treatment of intense headache in "hysterical women;" I have notes of several successful cases.[8] Morphia and nitrate of silver are beneficially given together for certain painful states of stomach-digestion, and for sundry forms of spasmodic colic,

[6] Morphia displays now and then curious anti-hypnotic properties, allaying pain but not causing sleep. Thus an elderly tradesman under my care, suffering from bronchial asthma and large emphysema with a harassing cough, derived great benefit from a nightly dose of Acetate of Morphia in a pill; cough and spasm were always immensely relieved, but his constant story was that he "never closed his eyes."

[7] "Cramps,
Side-stitches that shall pen thy breath up."
—*The Tempest*, act i. sc. 2.

[8] Dr. Handfield Jones has raised the interesting question whether a primarily neuralgic disorder may pass into an inflammatory, and expresses his belief that it may. He wisely cautions us against the delusive phrase of "hysterical pain;" and speaks of nocturnal delirium as quite homogeneous to neuralgia, both affections having their root in a feeble paretic state of nerve-centres, and being, as it were, branches of the same stock.—*Lancet*, Nov. 19, 1870.

accompanied by diarrhœa. Whenever hypodermic morphia is considered to be inadmissible, the following conditions of pain and spasm may be met by the internal administration of the medicine :—asthma ;[9] the passage of urinary-stones and bile-stones ; sciatica ; hiccough ; and numberless minor grades of suffering in which it is difficult to say whether Neuralgia or Myalgia predominate.

The pains of Chronic Rheumatoid Arthritis (which ought to be called Chronic Nodular Arthritis)[10] are greatly relieved by the systematic administration of small doses of Morphia ; and the auxiliary benefit may be secured of an improvement in the nutritive tone of the whole body. Unusual opportunities have happened to me of seeing cases of rheumatoid arthritis, and of witnessing the extraordinary recovery of muscular power which sometimes occurs under this treatment.

The excessive cutaneous pain which is the index of deep disorganization of the Spinal Cord, needs Morphia to be given in comparatively large quantities.

Case 5.—A gentleman, born in 1801, was under my care from 1860 to 1865 on account of exquisite neuralgia of various parts of the skin, which increased *pari passu* with a gradual loss of power in the lower limbs,

[9] Many cases of asthma are advantageously treated (such is my experience) by a combination of Morphia and Bromide of Potassium.

[10] The "nodular rheumatism" of Trousseau, whose experience of its comparative rarity in men as compared to women would not be confirmed by English observers.

and an obstinate constipation of the bowels. The symptoms differed specifically from those of Locomotor Ataxy. The hypodermic use of Morphia being declined, I was compelled to give it by the mouth in augmenting doses, until it became no uncommon thing for him to consume eight or nine grains in the twelve night hours. The atony of the bowels was partially overcome by Colocynth enemata. Death came at last from pulmonary congestion and general exhaustion. There was no necropsy, but several accomplished physicians who saw the case at different times were agreed about its probable pathology.

When speaking of the opiate treatment of acute Conjunctivitis, I mentioned the superior value of Morphia in the old "antiphlogistic" sense. It was suggested by the late Mr. Z. Lawrence that, in a certain class of cases, pain may be the cause of repletion of blood-vessels, and he submits that the action of Morphia may be to reduce that nervous irritability which is the primary cause of the inflammation. My own practice differs from that advised by Mr. Lawrence in one specific point, though generically the same. The doses enumerated by him were administered never with greater frequency than every third hour, sometimes every fourth hour, and the amount of each dose is comparatively large ($\frac{1}{4}$ to $\frac{1}{2}$ a grain). I strongly recommend a great reduction of dosage, and a proportionate increase of frequency in its repetition. To a child of five years old I give $\frac{1}{40}$ to $\frac{1}{32}$ of a grain of Morphia every second hour, with the rigorous instruction that the effect be

carefully watched. For an otherwise healthy adult I prescribe $\frac{1}{16}$ of a grain of Morphia every hour for the first day (omitting the eight hours of the night), and about $\frac{1}{10}$ of a grain every two hours for the subsequent two or three days. The affected eye should have complete physiological rest, and must never be opened during the early stage of treatment except for necessary inspections by the medical man. The effect of this simple scheme of therapeutics is usually very happy. The patient may be scarcely aware that any drug is being taken, as only the slightest approach to narcosis is permitted; he is prudently confined to the house and restricted in his diet; an occasional purgative also may be desirable. But note how quietly the vascular congestion of the conjunctiva disappears; how the pain and photophobia diminish, and may go away entirely on the third or fourth day of the treatment; and sometimes the cure may be completed in less than a week without any other help, though it may be expedient now and then to finish with Quinine as a vaso-motor tonic, in order to gain a perfect victory.

According to this therapeutic plan, a "narcotic" dose of Morphia is broken up into fractional "stimulant" doses, which are given to a patient with punctilious regularity at definite short intervals of time. I never allow (if it can be avoided) the accumulative influence of "stimulant" doses to cause "narcosis." I have the power of controlling this by *lengthening the intervals* or by *diminishing the quantities:* and I prefer the latter plan as more truly in accordance with the physiological

operations of Nature.[1] So that a typical narcotic, like Morphia, may become a rational stimulant medicine, rectifying by its direct influence "some deficient or too redundant natural action or tendency."

Case 6.—In September 1869, I was consulted by a lady's maid, aged twenty-three, healthy but rather anæmic, who was suffering from acute conjunctival catarrh. One-sixteenth of a grain of Hydrochlorate of Morphia in solution was administered every hour on the first day, and $\frac{1}{12}$ of a grain every hour on the second day; the same quantity every two hours on the third day; and every four hours on the fourth and fifth days. She was then quite well.

Case 7.—In March 1874, I attended a dressmaker, aged twenty-four, in whom acute inflammation of the conjunctiva had been coming on for two days; the disease had become severe, and the chemosis so great that the cornea was overlapped all round by the swollen conjunctival membrane. The eye was kept closed by gentle pressure, and the Morphia medicine administered precisely as in the case just narrated. The acute symptoms were subdued in a similar way, but a residual congestion obliged a tonic treatment with quinine and iron for nearly three weeks.

Another case was attended by me about the same time, in a person of the same occupation and of about the same age. Here the vascular disturbance and the

[1] My observations on the Administration of Medicines in comparative small and frequent doses were published in the *Brit. and For. Med. Chir Review*, Jan. 1872.

pain were so considerable that 15 drops of Antimonial wine were added to each dose of the Morphia. The success of this combination will meet with more convenient illustration by and by.

An exposition has been attempted of the diseases and emergencies for the pains of which crude Opium is the best (if not the only) remedy ; but its main derivative, Morphia, is often therapeutically interchangeable with it. A hereditary delicacy of organization may induce a special susceptibility to Opium, developing its finer shades of therapeutic benefit, and exemplifying its utility in a number of unexpected ways.

Dr. Bence Jones has described the action of Morphia in retarding oxidation of tissue. "As soon as the salts of morphia enter into every nervous filament, a molecular motion between the protagion and salt of morphia takes place : the resultant substance must be far less sensitive, far less capable of molecular motion than before ; and until the morphia is destroyed by oxidation or renewed by diffusion, the nerve cannot recover its former mobility. . . . The dry tongue ; the stoppage of the secretion of gastric juice, bile, intestinal fluid, and urine ; the paralysis of the nerves that dilate the iris ; the loss of mental and nervous power :—all these actions are evidence of the effect of morphia in stopping all chemical action, and in arresting oxidation by acting on the nerves which lessen the circulation of the blood. In this way Opium is one of the most potent antiphlogistic remedies we possess."[2]

[2] *Medical Times and Gazette*, Sept. 1866.

(3) The other principles of Opium do not much concern the subject of this work; but it is right to notice the physiological and therapeutical action of Narceia, as described by Dr. Eulenberg. He has used it in the dose of $\frac{1}{6}$ to $\frac{1}{2}$ grain for internal administration, and $\frac{1}{8}$ to $\frac{1}{4}$ grain for hypodermic injection. He has employed it with good results in the most varied diseases in which local irritation, attended with great pain or general excitement, requires the use of narcotics. Its operation is favourable in certain cases of peripheric neuralgia. It is a valuable remedy in all those cases in which Morphia is either not tolerated from the beginning, or in which it has lost its effects from long use.[3]

(4) Belladonna has a large sphere of therapeutic usefulness in lessening pain: though its repute seems to be greater when applied externally and locally, than when administered internally and in the hypodermic form.

Dr. Anstie praises Belladonna as "incomparably the best of all medicinal remedies for every kind of pain in the pelvic viscera."[4] Now the rapidity with which the alkaloid Atropia is eliminated from the system is remarkable, and has been demonstrated by Dr. John Harley; so that Mr. Reginald Harrison bases upon this fact his theory that the actual presence of the alkaloid in the urine explains the benefit following its administration in urinary affections.[5] Mr. Harrison says that

[3] Schmitt's "Jahrbücher," quoted in the *Brit. and For. Med. Chir. Review*, April 1867.

[4] *Practitioner*, July 1868.

[5] "Liverpool Med. and Surg. Reports," Oct. 1868.

"the cases in which the remedy is generally applicable are those which may be classified under the generic term—irritable bladder. . . . There is a form of irritation not unfrequently observed, both in males and females, more especially the latter, where there is great irritability, accompanied with the deposition in the urine of large quantities of epithelium. The symptoms sometimes resemble those of calculous disorders; but on introducing a sound, a roughened condition of the lining membrane is alone detected. These [cases] almost invariably do well under the influence of Belladonna." For the severe pain which often accompanies malignant disease of the Prostate Gland, Belladonna is recommended by Sir H. Thompson in a dose of $\frac{1}{4}$ to $\frac{3}{4}$ of a grain of the extract two or three times a day.[6]

Dr. Sydney Ringer speaks of the Colic of children as especially capable of relief by Belladonna.

The pains and perils of Constipation, when it amounts to "stoppage of the bowels," have been very successfully treated by Dr Alexander Fleming with small doses of *Liquor Atropiæ*. He prescribes a draught containing a drachm of Sulphate of Magnesia with a little Aromatic Sulphuric Acid and Tincture of Orange Peel, to be taken twice a day; to the evening draught is to be added $\frac{1}{60}$ of a grain of Atropia. The dose of Atropia is to be increased a little every night, until a very slight degree of the earlier physiological effect of the drug is produced. The medicine should then be diminished, and gradually discontinued. By the aid of other means (large enemata

[6] Holmes's "System of Surgery," vol. iv. p. 379.

and perhaps galvanism, with a rigid milk diet), the Colon is gradually unloaded of its contents ; the painful spasms subside ; the stomach becomes tolerant of food ; and the patient rapidly regains flesh and strength.[7]

The use of Belladonna for Asthma has been explained and formularized by M. L. Dr. Seé.[8] Dr. Hyde Salter was enthusiastic in his praise of the medicine, and asserted that its peculiar excellence consists in its power of lessening reflex irritability. His plan of giving it was not in small doses several times in the day, but as one considerable dose at bed-time (15 to 30 minims of the tincture). By giving the remedy three or four hours before the attack is likely to come on, the treatment becomes prophylactic. In all "habitual" diseases in which the recurrence keeps up the tendency, prophylactic treatment has, in relation to final cure, a pre-eminence it does not possess in diseases in which habit has no place. For such diseases it is *the* treatment.[9]

Some neuralgias (says Dr. Ringer) yield to Belladonna; it appears to possess most efficacy over neuralgia of the 5th nerve. Sciatica is sometimes relieved by it. Trousseau recommends the following method of treating Neuralgia :—administer $\frac{1}{5}$ of a grain every hour until giddiness is produced, and then let the quantity be decreased ; the medicine being continued for

[7] *Brit. Med. Journal*, Dec. 1865. An instructive case is related by Mr. Macrae, of Gateshead, in the *Lancet*, Jan. 25, 1873 ; and not long ago Dr. Murchison published a case which was equally interesting.

[8] *Practitioner*, July 1869.

[9] *Lancet*, Jan. 30, 1869.

several days.[10] It is a good remedy for Whooping-cough; and is useful for some forms of Headache, 3 minims of the tincture being taken every three hours. The indications for its use are when the pain is situated over the brows and in the eye-balls, which seem as if too large for the head, and as if they would be forced out of the skull. These headaches are frequently due to weakness and over-work.[1]

I have used Belladonna and Atropia very often for all the purposes now mentioned. Its uncertainty of action is very perplexing; I do not know when to predicate success, or how to account in many instances for failure. For example, as a prophylactic of asthma it is now and then splendidly successful; more often the failure is complete. I trust Belladonna very much as a remedy for pains in abdominal and pelvic viscera.[2] For the external neuralgias, the medicine is usually so inferior to several others that it is of questionable propriety to produce uncomfortable toxical symptoms for a doubtful ulterior benefit: but for some varieties of Headache, unconnected with the Tubercular cachexy, I find Belladonna safe and trustworthy, even if utterly empirical. The drawback of Atropia is its instability of composition; but for precision of application it is very useful.

I have spoken of the occasional advantages of combining Belladonna and Opium; and Dr. John Harley

[10] "Handbook of Therapeutics" (second edition), p. 369.

[1] *Ibid.*, p. 371.

[2] Trousseau (followed by Dr. Nunnely) seems to have exaggerated the merit of Belladonna as a remedy (by itself) for ordinary Constipation.

says that Opium invariably intensifies, not one or two, but all the effects of Belladonna.

(5) Aconite has been fully investigated by Dr. Reith, of Aberdeen. "The chief brunt of Aconite falls on the nerves of the Heart; if we could suppose Dr. Richardson's ether spray directed on the heart, it would give a fair idea of the effect of Aconite upon that organ."[3]

Aconite has been strongly recommended for Acute Rheumatism, but very conflicting accounts are given of it. Lombard of Geneva says that the alcoholic extract speedily dispels the pains and swelling, and gets rid of the effusion of synovia. This statement has been endorsed by Fleming and Neligan: but is more doubtfully received by Dr. Sydney Ringer, who points out that Acute Rheumatism, having no regular course or duration, may last even when untreated only a few days, or may endure for many months; so that it is sometimes difficult to decide whether the speedy decline of the fever is a natural decline, or due to the Aconite.[4] Dr. Wilks has prescribed tincture of Aconite for Acute Rheumatism, and seemingly with good results.[5] For the same object Dr. H. M. Jones, of Cork, strongly recommends a combination of Aconite and Quinine.[6] I confess that I share Dr. Ringer's scepticism on the action of Aconite in an attack of Acute Rheumatism; and I am sorry that I am not able to strengthen his eulogy of the constant power of Aconite to allay Inflammation and

[3] *Edin. Med. Journal*, April 1868.
[4] *Op. cit.*, p. 323.
[5] *Practitioner*, Dec. 1868.
[6] *Medical Press and Circular*, July 1, 1868.

its concomitant phenomena, although now and then the effects are extremely favourable. Are the pains of Gout, or the suffering of pure Neuralgia, relieved by Aconite? I must give a doubtful answer to both these questions; but we shall see ample reason for appreciating the powers of Aconite as a remedy for external use.

(6) Indian Hemp has been used in India for Tetanus,[7] and in this country for Chorea.[8] Its decided influence over extreme motorial phenomena led to its experimental use for Pain and Spasm; Dr. Russell Reynolds praises it highly, saying that it does not leave behind it headache or vertigo, and that it does not impair the appetite, or confine the bowels. The medicine has been used for Neuralgia, Whooping-cough, and Asthma.

To Dr. Churchill we are indebted for making us acquainted with the value of Indian Hemp in uterine disorders; but here we are concerned only with those which are accompanied by pain. Dr. Silver records cases which attest the value of the drug for Dysmenorrhœa,[9] when unconnected with grave organic læsions; and Menorrhagia may be arrested at the same time.

The kind of pain for which I have found Indian Hemp so beneficial is the subacute but obstinate headache which affects many "nervous" women at the menopause. It is useless unless given in a *maximum* dose—say 1 grain of the extract, and this must be

[7] Dr. Chuckerbutty in the Indian "Annals of Med. Science," July 1863.
[8] *Edin. Med. Journal*, March 1869.
[9] *Medical Times and Gazette*, July 16, 1870.

repeated four, five, or even six times in the twenty-four hours.

Case 8.—A lady, aged about fifty, the wife of a military officer, was under my care several times during 1869 and 1870 on account of attacks of headache, of the true "cephalalgic" type, and not any form of *migraine*. Several good remedies having been tried without success, I prescribed Indian Hemp, and gave it always in a dose of 1 grain of the extract every two hours until the pain was relieved. The drug succeeded on every occasion. I also kept my patient in bed in a dark room, and supplied her with frequent small quantities of concentrated nutritious food.

Dr. Anstie speaks of good extract of Indian Hemp ($\frac{1}{2}$ grain every two hours) as an excellent medicine for the *migraine* of young persons.

(7) Conium is a medicine whose effects have been equivocal, apparently because so long and so often administered in inadequate quantities.[10] We owe to Dr. John Harley its re-instatement in professional favour.[1] Conium does not belong much to the subject

[10] The only trustworthy vehicle of Conium is the expressed juice, carefully prepared from the fresh leaves gathered when the plant is in full flower.

[1] In a noteworthy paper read last year before the Royal Medico-Chirurgical Society, Dr. J. Harley illustrated the effects of Conium on some extreme forms of tonic and clonic muscular spasm. The voluntary motor system is soothed by Conium as the intellectual part of the brain is soothed by Opium to sleep. Convulsion is met by paralyzing (within the limits of safety) the motor centres (*Medical Times and Gazette*, Dec. 27, 1873). According to Harley, Conium relieves the pain of Cancer probably by relaxation of muscular fibre, just as the division of neighbouring muscular fibres relieves irritable ulcers (*Medical Times and Gazette*, March 30, 1869). Comp. a paper on the "Physiol. and Therap. actions of Conium and its Alkaloid," by MM.

of this work, but Dr. Garrod alludes to the virtue which it was once thought to possess in cases of Cancer, much more than in the mere alleviation of Pain. Dr. Walshe is assured of its efficacy in relieving the pains of Gastric Cancer. Dr. Neligan writes very eulogistically of Conium, and says that he has seen very beneficial results follow its use in many painful affections, some of which were attended with inflammation. Acute and chronic rheumatic affections are those for which he has chiefly administered it; and altogether he regards it as an "anodyne" and "sedative" of much power.[2] My own experience leads me to think that the principal value of Conium (so far as Pain is concerned) consists in augmenting the power of more decisive "anti-neuralgic" remedies.

(8) Henbane is a medicine of the quiet unobtrusive sort, and cannot be allowed to have much control over Pain. But Dr. Neligan is again enthusiastic, and writes of its utility in "all forms of neuralgic and spasmodic affections, when there is great excitability of the Nervous system, and when the stimulating effects of Opium would prove injurious."[3] Dr. Tanner speaks well of Henbane in cases of irritability of the Bladder; and Dr. Langdon Down tells me in a private communication that he values it highly as a remedy for Dysmenorrhœa. Moreover, we can concede to Henbane one good

Martin Damourette and Peluet, *Gaz. Méd. de Paris*, 37, 1870. How much used to be thought of Conium in the treatment of Cancer may be seen in Dr. Copland, *op. cit.*, vol. i. p. 237.

[2] *Op. cit.*, p. 510.

[3] *Op. cit.*, p. 456.

quality, namely, that it corrects the griping pains which often attend the operation of cathartic drugs.

(9) The medicinal properties of Stramonium resemble those of Henbane and Belladonna. I constantly use the extract of Stramonium for spasmodic troubles in the Chest. Mild neuralgia is beneficially affected by Stramonium; and I wish that I could ratify Dr. Neligan's glowing account of its "signal service" in "all forms of chronic disease attended with acute pain." I have sometimes alleviated severe headache with Stramonium.

(10) By its action on the Heart, Digitalis may remove pain contingent on some of its disorders and diseases. This medicine has been used for the treatment of acute inflammations; Mr. King, of Saxmundham, asserted that with doses of ʒiv—ʒviii of the tincture (even ʒij to a child of nine months old!) he could subdue most inflammations, and with perfect safety. I am entirely unbelieving, not about the safety of these doses, but about their efficacy. Severe dyspnœa, depending on palpitation of the heart, is beneficially treated with Digitalis.

(11) In few medicines is there so much good mixed with so much mischief as in Nux Vomica and its alkaloid, Strychnia.[4] The skilful master will find in them vast stores of therapeutic virtue, by no means limited to motorial derangements. Sundry forms of "atonic dyspepsia" are relieved by the tincture of Nux Vomica;

[4] "Within the infant rind of this small flower
Poison hath residence and Med'cine power."
Romeo and Juliet, act ii. sc. 3.

and the same may be said of the pains and inconveniences of chronic constipation. The combination of Iron and Strychnia is serviceable in the management of some visceral neuralgias: and Strychnia is recommended by Dr. Hammond for the pain of "Spinal Irritation."[5]

(12) So far as Calabar Bean is a remedy for tonic spasm or convulsion, it must alleviate the fearful pain which is inseparable from that condition. Dr. Fraser insists on the importance of employing the drug at the very beginning of an attack of Tetanus;[6] but our present evidence points to the conclusion that Calabar Bean has no absolute control over this disease. Mr. Nunneley used it for some active inflammatory affections of the conjunctiva, accompanied by pain and excitement.[7]

(13) Colchicum gives "prompt relief from the pain, inflammation, and fever of Gout." It is said, however, to be merely palliative, removing for a time the patient's sufferings, but in no way protecting him from their return; and many who suffer from gout think that while the medicine removes altogether an existing attack, it ensures the speedier return of another. There is no room here to speculate on the action of Colchicum; but I have closely watched its effect in attacks of acute gout. The Wine of Colchicum Seeds allays the pain of this disease with tolerable certainty

[5] *New York Medical Journal*, March 1870.

[6] The papers of Dr. Fraser in early numbers of the *Practitioner* deserve careful study.

[7] *Lancet*, Nov. 28, 1863.

and quickness if administered as a dose of 20 minims in an effervescing draught every two or three hours. No toxical influence is developed in ordinary people; and at the end of twelve or (at the furthest) twenty hours, some aperient medicine may be given with the expectation of crowning the good result of the Colchicum. At a later stage of the malady we may prescribe Compound Ipecacuanha Powder with acetic extract of Colchicum.[8]

I doubt whether Colchicum be an appropriate medicine for Rheumatism; but it is proper to relate the treatment recommended by Dr. Eisenmann of Würzburg.[9] He first states the wide application which he gives to the word Rheumatism, denoting by it every affection which may arise in the healthy system, independently of any specific cause, from exposure to cold. The means which beyond all others he has found of efficacy in the treatment of rheumatism is a mixture of colchicum and opium; the colchicum acting more efficaciously when so combined, and not giving rise to the half-poisonous effects which often attend its use alone. Neither the one drug nor the other produces alone the advantageous effects which result from their union. Dr. Eisenmann's formula consists of twelve parts of Colchicum Wine, and two parts of Tincture of Opium; twenty drops being

[8] Some "cautions and safeguards" on the use of Colchicum in gout may be seen in Dr. Todd's Clinical Lectures on certain Diseases of the Urinary Organs, and on Dropsies (1857), Lecture xv. But Dr. Todd never gave Colchicum its proper due.

[9] Quoted from the *Bulletin de Thérap.*, in the *Medical Times and Gazette* April 14, 1860.

taken three times a day. This preparation succeeds well in acute rheumatic affections, but is of no use in old and chronic cases. Its efficacy may be watched step by step in the case of catarrhal ophthalmia. From two to four doses are said to cure muscular rheumatism of the head and loins; and it is of much value in cases of "rheumatic neuralgia" (whatever that may be). In odontalgia the results are alleged to be truly remarkable, for a single dose may dissipate the pain.

On the other hand, Dr. J. Mason Good considered that the wine of Colchicum had more control over the pain of chronic rheumatism.[10] In severe Lumbago, it was a favourite practice of Dr. Elliotson to give a large dose of Opium (three grains), and then ʒss of the *Vinum Colchici* every eight hours.[1] Sir Thomas Watson takes a judicial view of the subject, and believes that in proportion as the synovial symptoms predominate, or mix themselves distinctly with the fibrous—in proportion as the disease approaches in its character to gout—we may be successful with Colchicum in allaying inflammation and pain.[2]

(14) Actœa Racemosa has been much vaunted as a remedy for Rheumatism and Neuralgia. The literature of this drug is confusing, but it seems best adapted to some forms of chronic rheumatism, the pains of which are (in my experience) often much soothed by the Actœa Racemosa, given in the form of tincture.

[10] "Study of Medicine," vol. ii. p. 282.

[1] Clinical Lectures in the *Lancet*, 1831–32.

[2] "Lectures on the Principles and Practice of Physic," vol. ii. p. 679. I have not access to a later edition of these Lectures than the third.

Acute Lumbago is sometimes well treated with this preparation.

Case 9.—A middle-aged woman came to me at the Eastern Dispensary, Bath, in the spring of 1872, complaining of what seemed to be sub-acute Lumbago. There was no history of injury or strain: there was no pyrexia: and the pain was increased by movement of the muscles. The tincture of Actœa Racemosa was administered in a dose of 25 minims three times a day, in simple distilled water. No other medicine was ordered, and the patient was not even enjoined to rest. The benefit was decided and almost immediate; and in six days the pain was no longer felt.

In other cases, apparently quite like this, I have been entirely disappointed.

Dr. Ringer acknowledges the satisfactory results often yielded by this remedy:[3] and I find that the pain of chronic rheumatoid arthritis may be distinctly controlled by it.

Actœa is alleged to have some influence over dysmenorrhœa, pleurodynia, and headache; whether truly or not my own experience cannot affirm. More than twelve years ago, Sir James Simpson recommended the tincture of this drug—30 or 40 minims in water three or four times daily—for the treatment of neuralgia occurring in cases of amenorrhœa.[4]

On the whole, I fear that Actœa Racemosa will fall

Op. cit. p. 316. A short paper by Mr. Bartlett, in the *Practitioner* for March 1873, may be referred to.

[4] *Medical Times and Gazette*, May 18, 1861.

into the category of medicines whose fresh and early enthusiasm is not sustained by the facts of a more complete trial.

(15) Ergot has had some reputation lately in the treatment of Neuralgia. Mr. Woakes, of Luton, read a paper on this subject at the Oxford meeting of the British Medical Association in 1868, and related five cases of neuralgia which were cured in periods varying from four to six days.[5] One case of supra-orbital neuralgia which occurred in my practice was much relieved by Ergot ; but I have been quite disappointed on other occasions. Dr. Silver, of Sidney, Ohio, states that Ergot is better for headache than any other single article in the Materia Medica. He repeats a dose every half hour until four or five doses are taken ; he does not regard Ergot as a specific for headache, but thinks that "thousands of people are made miserable once a fortnight or once a month, who by the use of it may be made for the time comfortable."[6]

The unquestionable influence of Ergot over some motor aberrations leads us to hope that we shall discover a law determining its influence over Pain. As it raises motor force to a remarkable degree, there is an *à priori* probability that it may cure pain by raising the energy of sensation. There is a tolerable certainty that further investigation will lead to some interesting results.

(16) Cinchona and its alkaloid Quinine are pre-

[5] *Practitioner*, Oct. 1868.
[6] *Medical Press and Circular*, Feb 5, 1873.

eminent as antidotes to some varieties of Neuralgia. Supra-orbital Neuralgia is often periodic, without being in the least connected with Malaria; it is apt to come on during the early hours of morning, and female domestic servants seem particularly liable to it. Seven or ten grains of the di-sulphate of Quinine should be taken at bedtime; or, better still, at two hours before the pain is expected, if the patient can contrive to awake then. In a few days the dose of Quinine can be reduced by one half; but the medicine should be continued for a long time in the form of one small dose at night. We cannot explain at present why supra-orbital neuralgia should be more amenable to Quinine than any other neuralgia, some varieties of which are hardly at all controlled by Quinine. But it is the proper medicine for any sort of malarial neuralgia.

Diffused pain or soreness, the product of weakness and anæmia, should be treated with Quinine and nutritional tonics.

The use of Quinine for acute rheumatism was recommended by Morton, Heberden, and Haygarth; more recently by Dr. Davis of University College, and by Dr. Nevius of Liverpool.[7] Devrègie advised the same plan, giving ʒss or thereabouts in the course of twenty-four hours, though he confesses that "cerebral congestion" is sometimes produced.[8] I have already illustrated the opiate treatment of acute rheumatism; and perhaps our best therapeutic resource in this disease, so far as the

[7] *Lancet*, 1841–42, vol. i. p. 580; and *Brit. Med. Journal*, Sept. 8, 1866.
[8] *Lancet*, 1837–38, vol. ii. p. 286.

alleviation of pain is concerned, is to administer Quinine and Opium together.

Quinine is the best remedy for the intense local pain in the head which sometimes follows severe hemorrhages.[9]

Mr. Erasmus Wilson praises Quinine for the purpose of allaying that neurosis of the skin called *pruritus:*[10] and I have found it of good service in relieving *pruritus ani*, when given in one or two large doses every day. Proper local applications should be used too.

Some of our most splendid therapeutic results in the treatment of Pain have been obtained by combining Quinine with other medicines. For "sick headache," Dr. Latham speaks of the value of Quinine and Digitalis; and other combinations of much utility are—Quinine and Aconite, Quinine and Arsenic, Quinine and Belladonna, Quinine and Colchicum, Quinine and Strychnia.

(17) Veratria sometimes alleviates the pains of acute rheumatism and gout, and is a traditional medicine for neuralgia. According to a French writer, M. Peugnet, the ethereal extract of the resin of *Veratrum album* has great anæsthetic power;[1] and Dr. W. Carter has related his experience of the Tincture of *Veratrum viride* in mitigating the pains of acute rheumatism, when given in a two-minim dose every hour.[2] My experience of

[9] Dr. Nevius, *op. cit.*, p. 163.

[10] *Journal of Cutaneous Medicine*, Jan. 1870.

[1] *New York Medical Journal*, May 1872.

[2] "Manchester and Liverpool Med. and Surg. Reports," 1873.

Veratria is very small, because we possess other surer and swifter remedies.[3]

(18) The power of Turpentine and the Volatile Oils in lessening pain lies within a small range. Dr. Warburton Begbie prescribed it in a dose of 20 minims three times a day for Sciatica, and for crural and brachial Neuralgia in aged persons.[4] Trousseau ordered an emulsion of Turpentine for cases of erratic pains in the appendages of the uterus.[5] Dr. Copland was well known to be an enthusiastic advocate of Turpentine, and declared that a return of neuralgia after the use of it is less frequent than after any other remedy.[6] Turpentine has been quoted as a medicine for "biliary colic."

(19) At one time I used Valerian and the Valerianates a great deal for some forms of Neuralgia, especially if they were associated with so-called hysteria; but with such equivocal effects that I was glad to abandon them for better and more agreeable drugs. It is right, however, to allude to Dr. O'Connor's success with the Valerianate of Ammonia:[7] and Dr. Liveing affirms that Valerian and the Valerianate of Zinc are remedies of great value in the treatment of some cases of *migraine*, as they are in many other neuroses. Valerian was praised by Dr. Fordyce because it relieved his own sufferings; and Dr. Symonds, in his Gulstonian Lec-

[3] In other departments of Medicine I am most ready to acknowledge the efficacy of *Veratrum viride*.

[4] *Brit. Med. Journal*, Sept. 2, 1871.

[5] *Dublin Hospital Gazette*, May 1, 1859.

[6] *Op. cit.* vol. ii. p. 891.

[7] *Lancet*, June 18, 1862.

tures on Headache, is not less eulogistic of its therapeutic power, though he confesses that he thinks the drug less beneficial as a remedy for attacks of pain than as a corrective of the neurotic sensibility which gives rise to them.

(20) Dr. Clifford Allbutt has lately celebrated the praises of Sarsaparilla in the management of constitutional Syphilis;[8] and the pains of Syphilis may be removed by Sarsaparilla if it cure the constitutional affection. Sarsaparilla is a good old-fashioned drug which, after being eclipsed for a time by more imposing remedies, again asserts its supremacy.

(21) Camphor abates the "frontal headache" of a common cold, and has a repute (scarcely well-founded) for many spasmodic disorders. Mr. Milton recommends Camphor as the best remedy for chordee. It should be given in the fluid form; a teaspoonful of the spirit of Camphor may be taken in water before going to bed, and repeated whenever the patient awakes with chordee. In mild cases, one dose for a night or two is generally enough.[9] Dysmenorrhœa is sometimes relieved by Camphor.

(22) Lobelia is inoperative unless given in large doses.[10] It is a decisive remedy for the distress of Asthma; Dr. Hale combines it with suitable doses of ether, opium, and stramonium.[1] Dr. Hartshorne advises ʒss of the tincture of Lobelia and of Ipecacuanha wine to be given every half hour at the beginning of the

[8] *Practitioner*, May 1870.
[9] *Med. Circular*, Feb. 29, 1860.
[10] Dr. Ringer, *op. cit.*, p. 483.
[1] *American Practitioner*, Feb. 15, 1872.

asthmatic paroxysm.[2] But Lobelia is less used than it was twenty or twenty-five years ago.

(23) Guarana has fair evidence to support its claims. A communication on this medicine appeared in the *Monthly Journal of Medical Science* for 1852, by Dr. Ritchie, who says that he had found it useful for colic and nervous hemicrania; and about the same time Grisolle and Bouchardet mentioned its good qualities.[3] Dr. Wilks reintroduced Guarana to the notice of the profession as a remedy for "sick headache;" and acknowledged his obligation to Mr. Helmeken, of British Columbia, for sending him some powder. Dr. Wilks reports his own experience as so encouraging that he urged a trial of the medicine by his brethren.[4] The drug consists of the seeds of a tree growing in Brazil, called *Paullinia sorbilis;* and they are used by the Brazilians as we do Cocoa. On the natural history of Guarana Dr. Latham gives a long and interesting quotation from the "Traité de Thérapeutique" of Trousseau and Pidoux:[5] and Dr. Alexander Bennett has performed a number of experiments which prove that Theine, Caffeine, Cocaine, Theobromine, and Guaranine have identical physiological actions.[6]

The efficacy of Guarana in attacks of "sick headache" has been emphatically attested by Dr. Macdowall, who relates several interesting cases.[7] Continental opinion

[2] "Essentials of Practical Medicine," p. 467 (Philadelphia, 1871).
[3] "Pathologie Interne," fifth edition (1852), vol. ii. p. 581.
[4] *Brit. Med. Journal*, April 20, 1872.
[5] "On Nervous or Sick Headache," p. 63.
[6] *Practitioner*, Jan. 1874.
[7] Ibid. Sept. 1873.

of the remedy does not seem to be a high one; but Dr. Latham points out that there are different forms of "sick headache," and that therefore it would be too much to expect that any particular remedy should have the same effect in all cases. The sick headaches which Guarana seems to relieve are those in which distinct premonitory symptoms usher in the attack, and particularly those preceded by disturbance of vision. In these cases 15 grains of the powdered drug given as soon as the headache begins, and if necessary repeated in half an hour, or an hour, will often cut short the paroxysm.[8] I have prescribed Guarana several times in order to ward off a "sick headache" or *migraine*, and usually in the following way: A person awakes with the well-known warning signs, and ought to take immediately 30 or 40 grains mixed with a little loaf sugar. Half this quantity may be taken again before noon, and a third or fourth dose if the medicine have a real controlling power. A mild laxative will be generally necessary at bedtime; and on the following day the patient can probably resume those nutritional tonics which, after all, are the most trustworthy antidotes to pain. My confidence in Guarana increases, but much more experience is necessary before we shall be able to choose with instinctive precision the particular cases likely to be benefited by it. Is the medicine useful for any other form of neuralgia?

(24) The commonness of Coffee and Tea ought not to make us forget their virtues in relieving the head-

[8] *Op. cit.*, p. 68.

ache of fatigue and of nerve-exhaustion generally. Dr. Parkes and Dr. Symonds discourse eloquently of the "decidedly stimulative and restorative action of tea and coffee on the nervous system." Continental physicians use Coffee a great deal for *tic douloureux* and hemicrania;[9] and it has been employed for a century past during the paroxysm of acute asthma. Dr. Anstie recommends the administration of 1 or 2 grains of Caffeine for the alleviation of ordinary *migraine*. As a victim for a number of years to headache, the cause of which was often obscure, I can testify with thankfulness to the therapeutic qualities of a strong infusion of Tea; it rarely ever failed to do much good, and sometimes it instantaneously took away the pain. It seems to act like a true sedative on the heart.[10]

(25) The perplexingly contradictory teaching on the therapeutic value of Alcohol need not make us doubt the value of good wine in treating Neuralgia. There is no room here to speculate about the action of Alcohol, nor is it our business to prove or disprove its supposed affinity for nerve-tissue. Our plain duty is to regard Alcohol as a medicine, charged with all the restraints and responsibilities of a medicine; and the cautions already urged concerning Opium, when prescribed for paroxysmal pain, apply with even more force to Alcohol, for this is the way in which its abuse so often begins. But the food-action of Alcohol is as valuable as that of coffee and tea. Wines and spirits

[9] Dr. Warings' "Manual of Practical Therapeutics," second edition, p. 249.
[10] Dr. Headland, *op. cit.*, p. 236.

are sometimes used as "anti-spasmodics," and they are remedies for some of the petty aches and pains which arise from the tissue-degenerations of old age. Ether has some of these properties of Alcohol; and Sulphuric Ether has considerable repute for alleviating neuralgic dysmenorrhœa. Dr. Walshe recommends ʒss to ʒj of ether to be given now and then during an attack of cardiac neuralgia (so-called *angina pectoris*).[1]

(26) Chloroform is not much administered by the stomach, except in the form of "chloric ether," a compound of chloroform and spirit of wine. The use of chloric ether (now called Spirit of Chloroform) for the relief of pain is rather of an indirect kind; but it is a pleasant stimulant, and helps to correct the drastic effect of some purgative medicines. Combined with honey or glycerine, Chloroform has been recommended to be given frequently for hard spasmodic coughs. Before the introduction of hypodermic morphia I frequently treated attacks of "biliary colic" with Chloroform dropped on lumps of white sugar, and gradually melted in the mouth. The advice was Dr. Thudichum's, and in a few instances I have found the result highly satisfactory. But it is remarkable that Chloroform administered in the ordinary way has no appreciable influence on the degree or duration of pain: and any quantity at all equivalent to that usually inhaled would have a most irritating effect on œsophageal and gastric mucous membrane.

(27) Chloral Hydrate has been called with some

[1] "Diseases of the Heart and great Vessels," London, 1873, p. 582.

humour and much truth, Solid Chloroform. It is one of the best possessions put into our hands by the research of the last few years. The therapeutic qualities of Chloral are well known, and our enquiry is now as to its power in arresting or in mitigating pain.

The early history of Chloral was chiefly one of clinical experiment in different disorders and diseases. Soon it became possible to trace definite outlines of its action, and of course it was tried for all sorts of nerve troubles; its possible use in this way being deduced from its chemical composition. Basing his investigations upon what Liebriech had done, Dr. Richardson presented us with the following facts:—(α) Chloral produces sleep; (β) it relieves pain; (γ) it reduces animal temperature; (δ) it causes extreme muscular relaxation. On the second point, with which alone we are concerned, Dr. Richardson says that Chloral may be administered as a substitute for opium in cases of neuralgia, rheumatism, and cancer. "It may also be used for the same intention in surgical cases attended with much suffering; and may be carried, when required, to the extent of rendering a painful part sufficiently insensible to admit of its being altered in position or re-adjusted. The same application may likewise extend to the treatment of compound fractures when it is important that the injured parts should be moved without the excitement attendant upon suffering."[2]

Earlier even than this statement of Dr. Richardson's, Mr. Spencer Wells had welcomed the remedy, and tested

[2] *Medical Times and Gazette*, Nov. 6, 1869.

its qualities in the case of a young married lady suffering for the fourth time from a severe and intractable attack of Sciatica. Subcutaneous injections of morphia and atropia had lost their effect: acupuncture gave only a temporary relief: and at this difficulty 30 grains of Chloral procured for the patient the best night that she had enjoyed since the beginning of her illness—a night of perfectly tranquil sleep, from which she awoke fresh and well as from natural slumber. The dose was obliged to be increased in order to insure a perfect result, but at the end of three weeks the medicine was abandoned with much reluctance. Mr. Wells relates another case of a lady suffering almost incessant lumbar pains from epithelioma of the *cervix uteri;* here the conclusion was reached that 30 grains of Chloral gave as much relief to pain as 1 grain of opium.[3] On the whole Mr. Wells felt himself justified in hoping that the medicine would be of valuable assistance when we wish to obtain rapid relief to pain.

As curiously illustrating the correlation between Delirium, Spasm, and Pain (of which an exposition was offered in the early part of this treatise), it was soon announced that Chloral was an excellent medicine for traumatic tetanus (see cases described by Dr. Ballantyne,[4] Mr. Birkett, and Mr. Leach[5]), for delirium tremens (as related by Dr. Fletcher[6] and Dr. Russell Reynolds[7]), and for insanity.[8]

[3] *Medical Times and Gazette*, Sept. 18 and Oct. 2, 1869.
[4] *Lancet*, June 25, 1870. [5] *Lancet*, Sept. 24, 1870.
[6] *Brit. Med. Journal*, July 16, 1870.
[7] *Practitioner*, August 1870. [8] *Brit. Med. Journal*, July 16, 1870.

Continuing the therapeutic history of Chloral as applied to the relief of pain, we find Dr. Strange of Worcester using the drug in the case of a middle-aged person, much harassed by a large business, and suffering for two or three years from neuralgia of the trunk and extremities, which frequently changed its seat and became almost intolerable. Here a fair trial of Chloral enabled a patient to surrender the intemperate use of morphia, and to procure time for the restorative influence of tonic medicines. Dr. Strange speaks of the power of Chloral to subdue the pain and sleeplessness arising from the application of a blister; and he has found that face-ache from decaying teeth or from abscess of the gums has also yielded to the sleep-compelling influence of Chloral.[9]

The physiological pain of parturition seemed a fair opportunity for the experimental agency of Chloral. The following conclusions were drawn by Mr. Lambert, late house-surgeon in the Maternity Hospital, Edinburgh:—Chloral is of great value in the relief of pain during Labour; and it may be administered under favourable circumstances during and at the close of the second stage, with the result of producing absolute unconsciousness in the same sense in which we understand unconsciousness under chloroform. A labour can be conducted from its beginning to its end without any consciousness on the part of the patient, under the sole influence of Chloral. The proper mode of giving the medicine is in fractional doses of 15 grains every fifteen

[9] *Medical Times and Gazette*, Sept. 17, 1870.

minutes until some effect is produced ; and according to the nature of that effect the further administration is to be regulated. Chloral not only does not suspend, but rather promotes, uterine contraction ; and labours under the influence of Chloral will probably be of shorter duration than ordinary labours without Chloral.[10]

Dr. Playfair considers that the administration of Chloral as a means of lessening the pains of Labour is by no means appreciated at its proper value. It has this immense advantage over the inhalation of chloroform, that it does not seem to diminish the strength and intensity of the pains, while it decidedly diminishes their painfulness. There is a type of Labour very common, especially in women of a highly-developed nervous organization, such as constitute a large proportion of patients among the higher classes, in which Chloral is specially valuable. In order to save those hours of intense agony which exhaust a woman by fruitless suffering, it is the common and useful practice (as was described in the early part of this treatise) to administer a considerable opiate, so as to produce some hours of refreshing sleep ; after which we expect the labour to begin again with fresh vigour and effect. But if Chloral be given instead of the opiate, the probability is that the same refreshing rest will be obtained without any suspension of the pains or protraction of the labour. The character of the uterine contractions will be observed to alter ; they will become steady and useful, but they are not suspended. But the medicine may be

[10] *Edin. Med. Journal*, Aug. 1870.

administered in perfectly natural labour, for the specific purpose of lessening the sufferings of the patient. When judiciously taken the patient falls into a drowsy state, not quite asleep, but nearly so. She is roused as a pain begins, but suffers comparatively little; nor is there any ground for thinking that the remedy diminishes the frequency or the force of the uterine contractions. The way in which Dr. Playfair prescribes the drug is as follows. He puts ʒjss into a six-ounce mixture; and when the pains are becoming severe at the end of the first stage of labour, he gives one-sixth part of the mixture = 15 grains of Chloral. This he repeats in about twenty minutes; and usually after the second dose enough has been given to bring the patient sufficiently under the influence of the remedy. Its further administration must be regulated by its effects. If the patient be drowsy and relieved, a third dose need not be given for three-quarters of an hour or an hour; and then half the quantity will probably suffice to keep the patient in a sufficiently somnolent state. It is seldom necessary to give more than a third dose; and more than a drachm of Chloral need never be given during an entire labour.[1]

1 *Lancet*, Feb. 21, 1874. It is to be feared that some practitioners attend ordinary cases of Midwifery without reflecting how they may save unnecessary pain. The idea prevails that the pain of uterine contractions needs to be felt; and so the parturient sufferer is cheered by phrases and prophecies which, although true, are very mocking. In the wallet of every obstetrician there should be opium, chloroform, and chloral, and it is a challenge to his physiological and therapeutic knowledge which of these agents is the most appropriate to use in any given case. To sit with folded hands while a human being is torn with unmeaning throes, is not only unscientific but cruel.

The usefulness of Chloral in palliating the pains of Cancer was declared by Mr. Weeden Cook and Dr. Woodhouse.[2]

Very soon there came emphatic cautions about the administration of Chloral, and on its certain inconveniences and dangers, from Dr. B. W. Richardson,[3] Dr. H. W. Fuller,[4] and Dr. Crichton Browne.[5] This was the usual re-action from exaggerated pretensions and hopes; and in the course of 1872 it was observed that as professional confidence in the medicine declined, its popular sale actually increased.

Some thorough work was done by Continental observers on the uses of Chloral, and from an excellent summary of the subject by M. Bouchut I select two or three points which bear upon our present enquiries. It is a capital remedy (he says) for rheumatic pains, the pains arising from the passage of biliary calculi, from a carious tooth, and from burns. It allays the dangerous agitations threatening the life of a patient suffering very severe chorea. The sleep produced by this drug is highly anæsthetic, and is seldom associated with hyperæsthesia; and for many purposes Chloral has signal advantages over opiate medicines.[6]

Some spasmodic diseases, as asthma and whooping-

[2] *Lancet*, June 4, 1870; and *Medical Times and Gazette*, Dec. 31, 1870.

[3] *Lancet*, Feb. 11, 1871.

[4] *Lancet*, March 25, 1871.

[5] *Lancet*, April 1, 1871.

[6] *Bull. de Thérap.*, lxxvii. p. 433. Another paper by the same writer may be consulted in *Archives Générales de Médecine*, Dec. 1870. We cannot now endorse Dr. Clouston's aphorism that "whether Chloral does good or not, it never does harm" (*Brit. Med. Journal*, May 7, 1870).

cough, are often much relieved by Chloral.[7] Dr. Walshe recommends it for cardiac neuralgia. Dr. Anstie likes Chloral as a good palliative in *migraine* and *clavus;* and he advises as an ideal medication for "sick headache" ʒj of Chloral, and the patient's feet to be plunged into mustard and hot water. The pain of acute gout may be unquestionably mitigated by Chloral, when the malady occurs in highly sensitive persons.

I have used the medicine a great deal, and began therapeutic experiments with it immediately after its introduction into English practice. The opinions which have been formed from this experience may be expressed as follows:—Chloral often moderates, and sometimes abolishes, pain; but this is usually not of a severe and penetrating kind. To control this such large quantities might be necessary as to involve collateral dangers of no small moment.[8] It is doing scanty justice to Chloral to call it a capricious remedy; it is not capricious in the sense in which Belladonna is. Within specific limits, it exhibits an action as precise as that of a metallic substance; is it fair to expect too much of a medicine, and then blame it because it does not fulfil our expectations? We have many instruments to use, and many strings to play upon. If we had no medicine in the world but Chloral, it would be our duty to try and twist it to all sorts of purposes; but for a case of pure naked neuralgia,

[7] Paper read by Dr. Theodore Williams before the Clinical Society of London, *Brit. Med. Journal*, Oct. 25, 1873.

[8] An indication of the nature of some of these dangers is furnished by Dr. M. Fothergill, who speaks of Chloral as lowering the bodily temperature, and depressing the heart's action (*Brit. Med. Journal*, Jan. 10, 1874).

hardly any physician would think of trying Chloral before anything else. It is a valuable and trustworthy hypnotic, and so far as pain can be pacified by sleep, our object will probably be accomplished; but if the urgency of the pain postpone or check sleep, then it will be useless, and perhaps perilous, to push the medicine further. "Great excitement" and even "intoxication" are the casual accidents alleged against the safety of Chloral; and it is certain that the average medicinal dose is less than it was two or three years ago.[9]

(28) At the Annual Meeting of the British Medical Association held in London in 1873, Dr. Oscar Liebreich read a paper on a new remedy, the Croton-Chloral Hydrate.[10] The indications for the use of this remedy are to be found (α) in cases in which hydrate of chloral is inapplicable on account of heart-disease; (β) in cases of neuralgia in the district of the *trigeminus;* (γ) in cases in which very large doses of chloral are necessary to produce sleep. In some instances of tic douloureux, the remarkable phenomenon is exhibited that pain ceases before sleep sets in; but the remedy acts only as a palliative. Dr. Liebreich says that he prefers its action to that of morphia, because it has effects as good as the latter medicine, without being so detrimental to the general system.

Mr. Benson Baker relates several cases in outline in

[9] The hypnotic qualities of Chloral may be further illustrated thus:—disturbing ideas or emotions may repel sleep, though that sleep, if obtained, would subdue pain. Here we may bring the desired sleep by the soothing influence of Chloral, and so indirectly pain is relieved by its agency.

[10] *Brit. Med. Journal*, Dec. 20, 1873.

which Croton-Chloral speedily and decisively relieved pain: and it was not less efficacious for dysmenorrhœa.[1] Observations on the use of the medicine have recently appeared in the *British Medical Journal* by Mr. Lennox Browne, Drs. Durrant and R. W Falconer, Mr. Louis Lewis, Mr. Francis Lee, and Dr. Gray. A communication by Dr. Burney Yeo deserves particular notice, and the following conclusions appear to be established by his clinical experiment: (*α*) that Croton-Chloral has remarkable efficacy in some cases of pain in the branches of the trigeminal nerve, and need not cause the least drowsiness; (*β*) that it may afford relief in other obstinate forms of neuralgia; (*γ*) that it may be useful in some varieties of muscular pain. In dealing with this substance an unusually wide range must be given to the dose, for its effects vary greatly. Very decided effects may occur in delicate females from doses of 2 and 3 grains; in strong males a dose of 10 grains is often required to produce any appreciable good. The dose must also be proportionate to the severity and long-continuance of the pain. In the severe neuralgias, from 2 to 5 grains may be given every hour; or the smaller quantity every half-hour until 15 grains have been taken, and it would be hardly safe to go beyond this dose.[2]

I find that excellent results are now and then obtained by the combination of quinine with Croton-Chloral: the

[1] *Brit. Med. Journal*, Oct. 25, 1873.

[2] *Lancet*, Jan. 31, 1874. Ordinary proof-spirit is said to be a perfect solvent for Croton-Chloral.

former being dissolved as usual by diluted sulphuric acid, and the latter may be given in the form of pills. I shall speak presently of the simultaneous administration of the two forms of Chloral and Bromide of Potassium.

(29) Bromal sounds like a chemical curiosity, but some experiments have been made with it at the Berlin Pathological Institute under the immediate eye of Liebreich himself. It has been given to man only a few times, but it has seemed to soothe the pains of *tabes dorsalis*, and to have some good effect in epilepsy.[3]

(30) Bromide of Potassium is useful for all sorts of convulsion; and so far as convulsion is accompanied or followed by pain, it is our duty to discuss this action of the medicine here. On account of this remarkable property, Bromide of Potassium has been supposed, by a kind of far-fetched analogy, to remove or lessen the "excitability" of certain tracts of mucous membrane. Dr. Ringer speaks of the benefit which the salt may exert in a form of colic which sometimes afflicts children under two years of age.[4] In the treatment of neurotic asthma, we shall find the bromide very useful even when administered by itself; but it is a marvellous help to other more direct remedies. Dr. Russell Reynolds has given it with much advantage in certain nervous affections characterized by sudden, distressing, but indefinable feelings in the epigastrium and abdomen, which he

[3] Quoted in the *Medical Press and Circular*, Aug. 24, 1870.
[4] *Op. cit.*, p. 76.

attributes to disturbances of the vaso-motor system :[5] and on the same principle the medicine has been prescribed for the collapse of cholera, which is supposed to depend upon irritation of the sympathetic system of nerves.[6] That Bromide of Potassium would have some control over cardiac neuralgia is just what we should expect, and may be readily verified. Cases of neuralgic dysmenorrhœa are, according to M. Bernutz, now and then relieved by the bromide salts. And for some troublesome forms of headache, we have no superior combinations of medicines than Bromide of Potassium and Belladonna.[7]

The efficacy of opium and of Indian hemp is sometimes increased by the addition of Bromide of Potassium. But the combination of Chloral Hydrate and Bromide of Potassium is one of the most perfect weapons we possess. Dissolve 5 grains of the former with 25 grains of the latter, and let this be taken every two hours; there are few cases of trigeminal neuralgia that will not be conquered (at least for a time) by four or five doses. Of scarcely less value is the Bromide, when simultaneously given with Croton-Chloral. And I have secured good permanent results by these methods; so that I incline now to the opinion that any typical case of trigeminal neuralgia in a person not above middle age should be treated first in this way, as a sort of

[5] Quoted by Dr. Turnbull in the "Liverpool Medical and Surgical Reports," Oct. 1868.

[6] Dr. Pepper, in the *Philadelphia Medical Times*, July 12, 1873.

[7] Dr. Yandall and Dr. J. S. Davis in the *American Practitioner*, Feb. 1870. Dr. Handfield Jones uses KBr for "neurosal headache."

experiment to discover whether Morphia can be happily dispensed with. It is essential, too, that the Bromide of Potassium and Chloral be continued in lessening quantities for some weeks.

It is probable that the Bromide of Ammonium is perfectly interchangeable with the Bromide of Potassium.[8]

Dr. B. W. Richardson has accomplished a very serviceable investigation into the utility of the "organic bromides;" among which are to be enumerated bromide of quinine, bromide of morphia, bromide of strychnia, and combinations of these with one another.[9] They deserve a trial in what Dr. Richarson calls "neuralgic fever."

Dr. W. Hammond has highly recommended Bromide of Camphor in cases of headache from mental excitement.[10]

The toxic action of the Bromides must be kept in mind; a highly-drawn picture of this action appeared in a recent number of an American journal.[1] The power of Bromide of Potassium over motor derangement is so remarkable, that possibly we have not at all exhausted the therapeutic capabilities of the bromide salts for sensorial aberrations.

(31) Few articles in the Materia Medica exceed

[8] I adhere to old-fashioned nomenclature, because in a therapeutic book the terms used should be those most intelligible to the majority of medical practitioners.

[9] *Practitioner*, August 1871.

[10] *New York Medical Journal*, xv. p. 522.

[1] *American Journal of Medical Science*, 1872, p. 359.

Iodide of Potassium in wide range of usefulness. For the pains of bone, which are one of the cruellest parts of the history of Syphilis, we have no remedy besides; but I shall show hereafter that it often needs to be supplemented with Mercury. The medicine is valuable for the pain of chronic rheumatism, even when no syphilitic contamination can be traced; and it should always be administered to children who are suffering pain from so-called strumous disease of bone, especially when in or near the joints. Pain is a common symptom of many joint-diseases; the Iodide nearly always relieves it, but I am often disappointed of any beneficial effect in the so-called rheumatoid arthritis. Pain of every kind which is worse at night should suggest the internal use of Iodide of Potassium.

Some years ago Mr. Spencer Wells advised small and frequent doses of this remedy for the pain of chronic gout;[2] and I have followed his plan with much satisfaction.

In promoting the elimination of lead from the system, Iodide of Potassium is an antidote to the pain of lead-poisoning; and the use of the Bath thermal waters is an important auxiliary to this treatment. Dr. Tanner recommends the Iodide for the agony of lead-colic. The Iodide of Sodium is said to act better still; and Mr. Berkeley Hill praises the sodic compound as good for the body when it is weary of potash!

In the distress of some convulsive disorders, such

[2] "Practical Observations on Gout and its Complications" (1854), p. 240.

as asthma, the Iodides now and then afford great and immediate relief.[3]

I always prescribe Iodide of Potassium for tubercular meningitis (of brain or spinal cord) at any age, when pain is an urgent and early symptom. The same medicine was first used as a remedy for the pain of aneurism by Nélaton and Bouillaud in France, and soon afterwards in India by Dr. Chuckerbutty. Successful cases have been recorded in this country by Dr. William Roberts and Mr. Windsor.

The Iodides are uncertain remedies for non-syphilitic neuralgia; but there is no harm in giving them a trial, provided that their administration does not interfere with more trustworthy means. Hypertrophies of glands and chronic inflammations, whenever causing pain by bulk or locality, should be treated with the internal use of an iodide salt.

The simultaneous administration of a suitable form of Iron is often a great help to the power of the Iodide of Potassium or Sodium.

(32) Quite a new interest has been lately felt in the therapeutic use of Phosphorus, and the Hypophosphite compounds. Dr. Radcliffe commended the use of the latter for neuralgia more than ten years ago,[4] and the chief reason why Phosphorus was not tried at the same time, was because of the difficulty of preparing so poisonous a substance in an acceptable manner. The subject was revived by Dr.

[3] Dr. H. Hyde Salter in the *Lancet*, Jan. 23, 1863.
[4] *Brit. Med. Journal*, Nov. 1863.

Thorowgood,[5] who said that he wished to administer Phosphorus as an internal medicine whenever we have reason to suspect that the nutrition of nervous tissue may be failing from a loss of its right proportion of this essential ingredient. Phosphorus should be given for its restorative action over weak nerves, just as we give Iron to nourish blood that is weak from lack of this constituent: and as a nutrient tonic Phosphorus has been administered for some diseases of the skin.[6]

A method has lately become available by which the medicine can be given in a form at once active and inoffensive; namely, dissolved in oil or lard, and enclosed in a gelatine capsule. The dose is about $\frac{1}{30}$ of a grain, and it may be taken after food two or three times a day. Thus prepared, Dr. Broadbent has prescribed Phosphorus for a case of "severe neuralgia with a peculiar complication," characterized chiefly by sick headache or *migraine*, to which was added true gastralgia at a later period of the illness.[7] The careful regulation of a rich nutritive diet, with the administration of Phosphorus and cod-liver oil, brought about a complete alleviation of pain, and the health improved in all respects. Dr. Broadbent has given the medicine also in cases of "nervous breakdown" and atonic dyspepsia.

Mr. J. Ashburton Thompson insists that solid Phos-

[5] *Practitioner*, July 1869.
[6] *Dublin Journal of Medical Science*, Jan. 1872.
[7] *Practitioner*, April 1873.

phorus must be perfectly reduced (pulverised) if it be desired to give the remedy in this form with safety and success. It must be introduced into the stomach when full of food, and should not be prescribed for patients who do not eat moderately well. Phosphorus may be dissolved in cod-liver oil with the result of completely concealing or losing its odour and taste. This solution is active and efficacious in well-chosen cases of neuralgia. The occurrence of the most trifling dyspepsia or diarrhœa should lead to an instant suspension of the remedy. Phosphide of Zinc is named by Mr. Thompson as presenting a convenient means of procuring the therapeutic effects of free Phosphorus, and may be administered in a dose of $\frac{2}{3}$ of a grain every four hours for certain forms of neuralgia.[8]

Dr. Bradley has related a case of "frequently recurring paroxysms of neuralgia of the chest-walls," suffered long and patiently by a gentleman who had been "a regular round of London and provincial doctors," and for whom "every plan and remedy had been tried, from quinine to Pulvermacher's chains and heroic doses of Arsenic." Weary of orthodox medicine, he sought aid from a "homœopathic" practitioner, who succeeded in pacifying his patient's sufferings in a very short time by the so-called mother tincture of Phosphorus, of which 5 drops were to be taken on the approach of an attack, and repeated as occasion required. The tincture of Phosphorus is a solution of Phosphorus in

[8] *Medical Times and Gazette*, March 21, 1874; and another paper by the same writer in the *Practitioner*, July 1873.

ether, which dissolves about 1 per cent., so that each dose contains about $\frac{1}{20}$ of a grain of Phosphorus—scarcely homœopathic according to old-fashioned notions.[9] Further evidence of the same favourable kind has been adduced by Dr. Slade-King and Dr. Bradbury, who gave the medicine either in the form of capsules or as an ethereal solution.

For the pain of spinal irritation, Dr. Hammond recommends the internal use of Phosphorus and Phosphoric acid; but of the latter compound it must be said that, so far as the Phosphorus is concerned, there is no medicinal value in it whatever.

In the "Additions to the British Pharmacopœia of 1867," there is a new preparation called Phosphorated Oil, the dose of which is 5 to 10 minims. My own experience of Phosphorus is as yet slight and inconclusive; but I can speak with much confidence on the use of the Hypophosphite of Soda, which I have prescribed several times for facial neuralgia, and never without some success. Fifteen grains of the salt may be given in solution four times a day. When the precise therapeutic value of Phosphorus and the Hypophosphites shall have been established by sufficient knowledge and authority, I believe that they will be more often resorted to not only as curative agents, but as antidotes to that state of the "Nervous system which commonly leads to pain."

(33) A study of the medicinal qualities of Arsenic

[9] My reference to Dr. Bradley's case is mislaid: but it occurred in a medical periodical some two or three years ago.

has disclosed facts of high interest. Its action on the Nervous system exemplifies the intimate relation of motor, sensory, and vaso-motor disturbances:—it brackets these disturbances together, and tells the secret of harmonizing the discord. It is a fact that when we are administering Arsenic to a person for one sort of lesion, say a motor disease like chorea, a sensory lesion (neuralgia), or a vaso-motor lseion (some skin diseases) will get well at the same time. We grasp the same root of these various manifestations of nerve-error; we are trying, perhaps, to strengthen that root for one reason, and we find that other branches of it are being strengthened at the same time. Of very few substances can these remarkable therapeutic qualities be predicated; and when we remember further that Arsenic is a first-rate remedy for Malaria, we shall understand why it occupies such an important position in the Materia Medica.

Dr. Anstie has a warm eulogy of this medicine in his book on Neuralgia. He speaks especially of its utility for the so-called *angina pectoris*, and thinks that it may sometimes eradicate the anginal tendency, or reduce it to more manageable forms. Arsenic is a blood-tonic, and a good nerve-stimulant; being particularly useful for all pains of the Vagus nerve. Arsenic and Iron may be often administered together with much advantage. Between six and seven years ago, attention was called to the value of Arsenic as a remedy for gastric pain by Dr. Leared, Dr. Campion of Dublin, and Dr. Norris of Stourbridge. Neuralgia attacking the stomach is thus described by Dr. Leared:—"The pain is no less variable

in degree than in kind. In some cases it is intense and fixed to a spot under the epigastrium. Sometimes it is more diffused and cramp-like, as if the stomach were being forcibly dragged and compressed. The pain may even extend over a great part of the abdomen; when it is very intense, the state of the patient borders on collapse," both as regards the feebleness of the pulse and the cold perspiration. "The length of the attack, like the intervals between them, is very variable; . . . for some time after it has subsided, the epigastrium is sore on pressure. In every instance of the disorder which has come under my notice, the subjects of it were persons of middle age, and debilitated by some influence previously at work."[10] Care must be taken in the selection of these cases, for the Arsenic may do harm instead of good, and act as a direct irritant. When we are seriously in doubt, the best rule is not to give Arsenic until after due attention has been given to diet and certain remedies have failed. It should be clearly ascertained whether the pain be induced by taking food or not. If the pain be violent, and if it come on generally when the stomach is empty, Arsenic will almost certainly succeed. If the patient live in a district where ague prevails, and especially if he have had the disease, or if he have had neuralgia of the face or head, there are decided indications for the treatment. But if the papillæ of the tongue be red and prominent, and whenever the epigastrium is constantly tender on pressure,

[10] "Diseases of the Stomach," p. 350. See also *Brit. Med. Journal*, Nov. 23, 30, and Dec. 14, 1867.

the medicine must never be given. The usual "cautions and safeguards" require to be observed:—begin the remedy in very small doses, and always after food; restrain purging by opium; and attend to the constitutional warnings of any toxical effects.

In a subsequent communication to one of the medical journals,[1] Dr. Leared. maintains that whether the pain attacks the stomach or intestines, its nature is the same, and essentially neuralgic. The difficulty of diagnosis between the neuralgic and the more common forms of gastro-intestinal pain is sometimes very great; and perhaps it is the best rule of practice, when gastric or intestinal pain resists all ordinary treatment, and cannot be traced to gall-stones or any organic source, to test the matter by the effect or non-effect upon it of the remedy. Its curative properties are most marked in severe cases of paroxysmal pain, and its success becomes doubtful in proportion as the case resembles those in which a lower degree of pain is traceable to the influence of food (Dr. Thorowgood). And there are certain circumstances which may greatly aid us in making a therapeutic diagnosis:—has the disease come on after mental shock or strain? has the patient suffered previously from neuralgia? and has he had hemicrania or ague? I relate the outlines of a case which is interesting because a failure in diagnosis led to the trial of wrong remedies, and the chance success of Arsenic led in a sort of backward fashion to a right diagnosis of the malady.

[1] *Medical Times and Gazette*, July 23, 1870.

Case 10.—A boy, twelve years old, son of a farmer, and enjoying usually very good health, consulted me in the spring of 1873 for a sudden and terrible pain which seized him once a week or ten days (and even oftener) in or near the pylorus. It lasted from five to fifteen minutes; it came on and went off independently of food and the digestive process; but its severity was such that, according to the parents, the child sometimes rolled and writhed on the ground. Again and again I examined the chest and abdomen in all physical ways, and was invariably and utterly baffled in trying to discover the cause of the pain. Traditional medicines for stomach difficulties did no good, and the only benefit which came from opium was that it lengthened the intervals of freedom from pain. Solely by chance, and not because I remembered that Arsenic had been suggested for such cases, I prescribed at last 4 minims of *Liquor Arsenicalis* in infusion of orange-peel, to be taken three times a day. About twenty-four doses were taken altogether, and with a success so complete that the pain did not return for nearly a year. Last spring there was a return of the old symptoms, but the same medicine was immediately successful.

Lately I met with some statistics which appear worth quotation on the Arsenical treatment of neuralgia.[2] Dr. Cohen, physician to the Jewish Hospital founded in Paris by M. de Rothschild, gave Arsenic with

[2] *Journ. Méd. de Bruxelles*, quoted in the *Dublin Medical Press*, March 2, 1864.

favourable results to sixty-five people suffering from neuralgia :—

Facial Neuralgia	occurred	in	35	cases.
Sciatic	,,	,,	8	,,
Intercostal	,,	,,	4	,,
Otic	,,	,,	2	,,
Dental	,,	,,	2	,,
Epigastric	,,	,,	14	,,

In the two cases of dental neuralgia the patient had had several teeth extracted in vain ; but the administration of Arsenic made a rapid cure. Mr. Cohen adds that sciatic neuralgia is that form in which the effect of the medicine is least evident.

Arsenic has been extolled for asthma, and certainly it often relieves the pains of rheumatoid arthritis (Drs. Begbie and Fuller). Sir James Simpson used it for dysmenorrhœa, and Dr. Bright for hemicrania.

On the whole, trusting Arsenic as I do a great deal, and prescribing it often for the more obstinate forms of (even non-malarious) facial neuralgia, I seldom think of it as the *first* medicine to be tried. We possess other substances more prompt in their action, and generally more decisive ; but it can be admitted without any disparagement of those substances that Arsenic sometimes confers a permanence on a cure which cannot be obtained by other methods. Sometimes we may get capital effects from Arsenic in those cases of neurosis which are complicated with skin-inflammation, such as Herpes zöster ; for this lesion

I believe that there is hardly a superior combination of remedies than arsenic and quinine. Arsenic and iron are proverbially efficacious when given together.

(34) The capabilities of Iron for the relief of pain are enormous. What an impulse it gives to the *nisus* of nutrition; firstly by its restoration of blood-elements, and then by its stimulating qualities to nerve-tissue! Anæmia, constitutional diatheses like phthisis, and the toxæmia of lead and gout, are fruitful sources of malnutrition of the whole body, and therefore of nerve-cells and nerve-threads as parts of the body. Degenerative changes are hastened by poverty of blood, and damage to blood-vessels indirectly causes damage to the structural quality of nerve-centres. Neuralgia is a natural and easy outcome of such a state of things.

Now, although Iron cures anæmia, it does not follow that it will always cure neuralgia. A nerve may be not ill-nourished, but may have fallen into a bad dynamic habit: requiring to be put right not merely by Iron, but by other medicines—say quinine or strychnia. First nourish a nerve well, and its perverse habit will much sooner go away; or it will not go away for any length of time unless that preliminary condition be attended to. And such is the great help which Iron supplies. Administer the medicine in a proper form and in sufficient quantities, and it seems to be a medium of power in itself, and to enable the system to gain more power out of protein food.

Many and ingenious are the preparations of Iron in the British Pharmacopæia; but beyond all doubt or

cavil, the Tincture of the Perchloride is the most available for the relief and the cure of Pain. The diffused aches which infest anæmic persons go away surely and speedily under the influence of this magnificent remedy, whose virtues are approached *longo intervallo* by those of Sesquioxide of Iron.[3] Dr. Allbutt says that in Iron we have two kinds of value;—its value in ordinary small doses and in mild forms when it removes simple anæmia, and its value in large doses when it seems, apart from the presence of any definite anæmia, to have a special effect in modifying the morbid state of nerve-tissue.[4] I am convinced that infinite disappointment and negative harm come from prescribing Iron in inadequate doses; *quoad* neuralgia, we must sometimes administer the Tincture of the Perchloride in a quantity of not less than 30 minims four times in the twenty-four hours. It should be abundantly diluted with water, and taken shortly after meals; and a certain styptic harshness of flavour is removed by the addition of a little glycerine. When we see what this preparation of Iron can achieve for the vasomotor paralysis which is at least part of the essence of Erysipelas, may we not infer that it must have some strong mastery over Pain?

Rheumatism and Erysipelas are congeners more than is commonly acknowledged by the Pathology of to-day. Their affinities were exemplified (from a puerperal point

[3] Dr. Elliotson introduced this form of Iron for neuralgia, and thereby did good service when the treatment of this disorder was of a vague and hesitating kind (*Med. Chir. Trans.*, vol. xiii.).

[4] "Liverpool and Manchester Med. and Surg. Reports," 1873, p. 111.

of view) by some cases narrated by Dr. Evory Kennedy in his opening address to the Midwifery Section of the British Medical Association, at its Birmingham meeting in August 1872.[5] It is only fair to Dr. Inman to confess that he advocated the internal use of the Tincture of Perchloride of Iron for acute rheumatism more than eleven years ago.[6] To Dr. Russell Reynolds we are indebted for a revival of the practice, and for an exposition of the benefit to be derived from the use of it.[7] He pointed out the definite, uniform, and speedy relief of the joint-affection and the accompanying pain, and the entire absence of any symptoms of discomfort induced by the Iron. Dr. Anstie has advanced further in the same direction, and pronounces the prophylactic treatment of rheumatism by Iron to be one of our most valuable recent improvements in Medicine.[8]

Case 11.—A young lady, about fifteen years of age, was attended by me for a severe general attack of sub-acute rheumatism in the spring of 1872. When the febrile symptoms had seemingly passed away, there remained much myalgia, or neuralgia, or perhaps both; and there were occasional accessions of pyrexia. The pain was often severe, and dwelt chiefly in the muscles of the back; but sleep was seldom interfered with.

[5] *British Medical Journal*, Aug. 10, 1872.

[6] *London Medical Review*, March 1863.

[7] *British Medical Journal*, Dec. 18, 1869.

[8] *Practitioner*, Sept. 1871. In an analysis of the treatment of Acute Rheumatism pursued at some London hospitals, and reported in the *Brit Med. Journal* for Jan. 2 and 9, 1869, no mention is made of the internal administration of Iron, except as a tonic to promote recovery to health.

For two or three weeks the case was a therapeutic puzzle, and defied any amount of morphia and quinine; nor were local applications more successful. The body was not anæmic, and a large quantity of the best food and wine was taken. At length 25 minims of the Tincture of Perchloride of Iron were ordered to be given four times in the day, no other change being made in the treatment; and not only did the pain make a quick and final retreat, but the strength rapidly returned, and all functions of health came to be properly performed.

I have seen an adult female bowed and bent with the severe agony of spinal neuralgia, undoubtedly of rheumatic origin; and the relief afforded by the administration of the Tincture of Perchloride of Iron has been almost as prompt as that usually brought by hypodermic morphia. My experience, therefore, not only confirms the testimony of Drs. Reynolds and Anstie, but I advocate the claims of the same medicine for the "pains and penalties" which may visit the body that has been undermined and depraved by chronic rheumatism and chronic gout. Disease of heart and kidney is the most frequent expression of this deterioration; and to ward off this morbid state, or to mitigate it when developed, is a wonderful property of many salts of Iron.

Cardiac neuralgia is almost always associated with degenerative changes in heart-muscle, and Iron should be administered for both reasons. Dyspepsia, dysmenorrhœa, pain in the back, and that constitutional

languor or irritability which borders upon pain, call for the tonic qualities of Iron. Dr. Liveing recommends the *Mistura Ferri Composita*, or Tartrate of Iron in effervescence with bicarbonate of potash and tartaric (citric?) acid, when "megrim" is associated with anæmia, chlorosis, and general debility.[9] And the lengthened administration of a ferruginous medicine may sustain the health, and render it less liable to the inroads of painful disorders.

(35) Mercury is so opposite to Iron in most of its therapeutic qualities, that we might hastily infer that the kind of pain to which it is an antidote must be of quite a different kind. There are three conditions in which Mercury is very useful for removing pain, or feelings of uneasiness which in their character approach pain: (*α*) as a purgative it can clear away *excreta* which irritate and perhaps provoke spasm; (*β*) it may promote the absorption of inflammatory exudations which hurt by their bulk and position; (*γ*) the sufferings of syphilis may be extremely soothed by the judicious administration of Mercury. The torture of cranial syphilis undoubtedly needs Mercury for its permanent relief. I wish to lay stress upon the fact that if syphilitic pain of bone be not alleviated by comparatively small doses of iodide of potassium, we may rightly conclude that we are on the wrong track, and that nothing will be gained by making those small doses large ones.

[9] "On Megrim, Sick Headache, and some Allied Disorders," p. 439. Dr. Martineau recommends Iodide of Iron in pills; see Art. "Cephalalgie," in "Nouveau Dictionaire de Médicine et de Chirurgie," tome vi.

Case 12.—A middle-aged man engaged in a small business consulted me in the winter of 1872–73 for severe headache, obviously connected with a remote syphilis. He gave me the prescriptions of two medical friends, which showed that iodide of potassium had been pushed to a large extent, and still no mitigation of pain had followed: mark this—he was no better at all at night, and had slept little for several weeks. I made no change in the treatment, except to add to each dose of the iodide (which I actually reduced in quantity by two-thirds) 2½ grains of "blue pill," and this was given twice a day. In four days a considerable amendment occurred; and in another period of four days the pain had entirely gone. The medicines were continued once a day for six weeks, without any unpleasant symptoms from the Mercury. The man remained well for nearly a year, when his old enemy returned to be again subdued by the same combination of remedies.

There are some acute inflammations about which it may be conceded that it is safer to prescribe Mercury with opium, on the plea that the pain will sooner abate. Indeed, my experience affirms that acute inflammation of the larger joints and of the middle and internal ear requires Mercury in an absolute way, for the sake both of saving pain and of preventing disorganization of structure. For the severe pain of that pyæmic disease called gonorrhœal rheumatism, there is no trustworthy medicine but the soluble Biniodide of Mercury. Obscure pains in different parts of the body are often removed by a "course" of a mild Mercurial preparation, and the

Perchloride of Mercury has a well-earned fame for its beneficent powers.

(36) Antimony is known in Medicine chiefly by the compound denominated Potassio-tartrate of Antimony. For the deliverance of the human body from pain, I am conversant with no substance which does such perfect work at such petty cost: it realizes Pope's medical aphorism—

"As Poison heals, in just proportion used."

For certainty of action Tartrate of Antimony rivals, if it does not excel, all other medicines; and by the method of administration in comparatively small and frequent doses we obtain an agent of rapid and unequivocal effect in the treatment of inflammatory pain.

Case 13.—In September 1866, a lady, about thirty-eight years old, was delivered of her eighth child. She had a severe flooding immediately afterwards, which I had a difficulty in stopping. On the afternoon of September the 5th, fifty-eight hours after delivery, signs of inflammation of the left breast were noticed. Six hours afterwards, late at night, I was called to see her on account of a sudden intensity in the local symptoms, with much pain. Fifteen minims of Antimonial Wine in two tablespoonfuls of water were given every hour through the night and until I saw the patient at eleven o'clock next morning. The inflammatory hyperæmia was then entirely gone, the breast was only a little more swollen than the other, and there was scarcely any pain. There had been not only

no vomiting, but no appreciable nausea; for anything the patient knew to the contrary, the nurse might have been giving her so many rations of cold water. The medicine was continued in the same dose every two hours until the next day, then every four hours for another day, and in less than four days from the beginning of the treatment all signs of inflammation of the breast had disappeared. No local application was used in this case except a piece of hot wet flannel covered with oiled silk.

Case 14.—At the end of September 1866, the wife (æt. twenty-nine) of a tradesman had a rapid and favourable labour. On the fourth day after delivery, inflammation of the left breast suddenly came on. Fifteen minims of Antimonial Wine were administered in water every hour for fourteen hours; and on account of general nervous excitability and a tendency to diarrhœa, 1 minim of tincture of opium was added to each dose of the wine. After five doses had been taken profuse diaphoresis occurred; coincidently with this the pain went away and light sleep followed; and within three days from the beginning of the treatment there was no vestige of what had happened.

The pain of Angeioleucitis and of Phlebitis is capable of control by the same therapeutic plan.

Case 15.—In July 1869 I was consulted by the wife of a farmer, a strong, healthy woman, of middle age. She had inflamed varix of the right leg, which was exquisitely painful; there was much redness of skin over the inflamed veins. The leg was placed

in the recumbent position; a pledget of hot wet lint, covered with oiled silk, was placed over the course of the vein. Twenty minims of Antimonial Wine were given in water every two hours for the first two days, and by degrees at longer intervals. A great improvement took place almost immediately, and within five days no trace of inflammatory action was left.

It is of high importance not to leave off the antimonial treatment too soon, or the inflammatory process may recur and then prove quite uncontrollable. The cases now adduced are sufficient to exhibit Tartrate of Antimony as an "antiphlogistic" of exceeding efficacy in the management of certain external inflammations; nor is any valid barrier set up by constitutional weakness, or so-called spanæmia. Indeed, a weak person had surely better take tiny doses of Tartrate of Antimony and be cured of a local inflammation, than endure the pain of an abscess and the drain of a puriform or pyoid discharge. Common sense dictates the surgical auxiliaries of "rest," "position," and "hygiene;" these will be duly enforced by the skilful attendant and the docile patient. The additional experience which every year brings enables me to feel a greater trust than ever in the positive power of Tartrate of Antimony, administered as described above, to hinder the development of an early local phlegmon. And this being so, it is certainly a mistake to call Tartrate of Antimony by the synonym of "tartar emetic;" for it is wrong to affix a name to a drug which indicates a single coarse property, and to bind

that name to it so unalterably that its better properties are hidden and often scarcely thought of.[10]

(37) Chloride of Ammonium (or Hydrochlorate of Ammonia) has had a difficulty in finding a therapeutic home in this country, although long ago Sir T. Watson recommended its internal use for a certain form of "faceache;" give it (he said) in ʒss doses, and discontinue it after four doses if no benefit follow. Dr. Liveing testifies to the value of Chloride of Ammonium (though confessing its uncertainty) for the more strictly neuralgic forms of face-pain:[1] and Dr. Symonds found a similarly good effect in cases of "Nervous headache" which would be now regarded as a variety of "megrim."[2]

Nearly six years ago, Dr. Anstie gave an interesting monograph on this medicine, and endeavoured to define its therapeutic laws and limits.[3] After remarking the apathy with which the Hydrochlorate of Ammonia is regarded in England when contrasted with its reputation in Germany, Dr. Anstie specially classifies the neuralgias in reference to their amenability to this medicine. First on the list stand *migraine*, and *clavus hystericus*, which are the facial neuralgias of the young; in these cases the efficacy of the Hydrochlorate of

[10] It is with regard to the astonishingly quick and definite results of medicines like Tartrate of Antimony, that even scholarly writers speak of a particular thing "acting like magic," or "working like a charm." As scientific men, ought we not to leave this mode of speech to the poets? It is right to mention that Dr. Churchill ("Diseases of Women," fourth edition, p. 752) refers in quite a non-emphatic way to the value of Tartrate of Antimony in mammary inflammation.

[1] *Op. cit.*, p. 445.

[2] "Gulstonian Lectures on Headache," *Medical Times*, May 15, 1858.

[3] *Practitioner*, Dec. 1868.

Ammonia is a fact of which the students and clinical clerks at Westminster Hospital are well aware. It seems to supply that mildly stimulant action which tends to restore interrupted function to its natural level. Myalgia of the walls of the chest and abdomen is often relieved promptly and permanently by the same drug. It affords relief to some recent cases of sciatica. For ovarian neuralgia Hydrochlorate of Ammonia had been previously praised by Dr. Waring-Curran;[4] but Dr. Anstie is inclined to trust other and older remedies. He particularly lauds it, however, for hepatic neuralgia, which is very troublesome and notoriously rebellious to ordinary anti-neuralgic treatment. There are perfectly typical cases of this disorder. The patient suffers from severe pain of the neuralgic type, deep in the region of the liver, with intermissions of perfect ease; there are no inflammatory symptoms, and on examination we find no sign of organic alteration. Sometimes the pain is limited to the immediate region of the liver; in other cases it extends towards the shoulder, as in many other liver affections. Here the Hydrochlorate of Ammonia (in doses of 10 or 15 grains) cuts short the attack quickly, and also dissipates the tendency to neuralgia.

The use of this medicine seems sadly empirical, but our duty is imperative to do what we can with it. In one point I can joyfully go with Dr. Anstie, that neuralgia in the region of the liver (whether true "hepatalgia" or not, I dare not say) is singularly

[4] *Medical Press and Circular*, Aug. 19, 1868.

well controlled by Hydrochlorate of Ammonia. I have tested the medicine several times in the case of an elderly lady who is often tormented with what she rightly calls "liver-pain," and who as often begs for the same means to cure it. I can speak of the virtue of the Hydrochlorate for other neuralgias with less confidence, as I believe that they can be nearly always sooner alleviated by other drugs; and we must never forget that our first duty is to cure our patients as quickly as we can, and not to try therapeutic experiments upon them. However, it is worth recording that in Indian practice Dr. Ebden has found the Hydrochlorate of Ammonia very satisfactory in quieting the so-called tic-douloureux;[5] and in France Dr. Barrallier says that he is pleased with its effects over certain forms of nervous headache, headache consecutive on menorrhagia, and headache dependent on functional derangement of the stomach.[6] Dr. Ringer has found it most successful when the pain of facial neuralgia is "undefined, shooting, not limited to one part, but sometimes felt along the lower jaw, at other times over the malar bone, in the temple, or in the ear."[7] Over spasmodic disorders (like whooping-cough) and their pains, Hydrochlorate of Ammonia has an uncertain control.

(38) Sulphate of Nickel was used by Sir James Simpson for a case of "severe and obstinate periodic

[5] *Indian Annals of Medical Science*, April 1854.
[6] *Bull. Gén. de Thérap.*, April 15, 1859.
[7] *Op. cit.*, p. 131.

headache," and with a good result.[8] A Carbazotate of Nickel is among the curiosities of Pharmacy.[9]

(39) Some salts of Bismuth (Nitrate and Carbonate) and of Silver (Nitrate and Oxide), and the purified black Oxide of Manganese, have a considerable reputation for relieving painful disorders of the stomach. The preparations of Bismuth above specified are certainly very useful when administered in sufficiently large doses (say ʒss of the carbonate). Nitrate of Silver has particular value for allaying the pain which precedes or accompanies pyrosis (it should be always prescribed in the form of pills). Opium may be combined with both Bismuth and Silver for the purpose of arresting the chronic diarrhœa which is part of the painful history of many chronic constitutional diseases. The black Oxide of Manganese was introduced by Dr. Leared[10] as a remedy for that exalted sensibility of the mucous membrane of the stomach, which becomes intolerant of natural contact with the food and even with the gastric secretion itself. The pain is described by different persons in different ways; either as a dull continuous pain, or as a pain of a teasing and gnawing kind, or like that which might be caused by a tight ligature. Dr. Leared describes Manganese as more efficacious than Bismuth, less constipating, and of course much more economical.[1] Manganese may also remove the pain of pyrosis, and for this and other

[8] *Medical Press and Circular*, December 30, 1868.
[9] Dr. Waring, *op. cit.*, p. 200.
[10] *Glasgow Medical Journal*, Jan. 1865.
[1] See paper by Dr. Goddard Rogers in the *Lancet*, March 5, 1864.

purposes should be prescribed in quantities of from 5 grains to half a drachm.

Oxide of Zinc has been well spoken of as a remedy for nervous headaches.[2]

(40) Cod-Liver Oil is the *facile princeps* of nutritional tonics; and is a splendid auxiliary to those medicines which help to build up tissues, to retard degenerative changes, and so act as conservative antidotes to pain. The therapeutics of Neuralgia are incomplete in many cases without Cod-Liver Oil in the background; or unless it follows the administration of remedies technically called tonic, but which are not more truly tonic than Cod-Liver Oil itself. By this medicinal food[3] our work is often crowned and finished; nerve-cells and nerve-fibrils are endowed with a higher vitality, and become less susceptible to those agencies which cause pain. A provincial physician, Dr. Durrant of Ipswich, was one of the first medical men who used Cod-Liver Oil for neuralgia;[4] Dr. Theophilus Thompson had previously suggested the practice in his Lectures on Pulmonary Consumption, but otherwise it had been little known or heard of. Dr. Thompson thought that the efficacy of the Oil is owing partly to the Phosphorus which it contains; but Dr. Headland doubts this, seeing that Phosphorus forms only $7\frac{1}{2}$ in 100,000 parts.[5] I do not resume a

[2] Dr. Hammond in the *Canada Medical Journal*, December 1868.

[3] Dr. Bence Jones quotes Cod-Liver Oil as an illustration of the impossibility of drawing a "hard and fast line" between food and medicine.

[4] *Association Med. Journal*, Oct. 6, 1854.

[5] *Op. cit.*, p. 300.

discussion of the causes of the remarkable efficacy of Cod-Liver Oil; enough it is to note here that, being an animal oil, it is "peculiarly adapted for being digested, absorbed, and assimilated to the adipose tissue of the human body." Now as fat enters largely into the composition of nerve-structure, we can understand the physiological reasonableness of giving a rheumatic and neuralgic patient all digestible forms of medicinal and dietetic fats. And the same principle governs the treatment of convulsive disorders.

Drs. Liveing and Latham agree on the utility of Cod-Liver Oil in cases of "nervous headache;" and Dr. Wood thinks that it invigorates the whole nutritive function. By the physicians of the last century Cod-Liver Oil was prescribed for chronic rheumatism, and for this disease it was first brought into professional notice.

It has been justly said by Dr. Buzzard that cases of "sick headache" are sometimes approached best by nutritional tonics like "Parrish's Syrup," which is composed largely of the phosphates of Iron and Lime.[6]

(41) Purgatives (including Anthelmintics) and Emetics may relieve pain by sweeping out of the body the cause or causes of that pain. In selecting these medicines, we must be guided very much by the conditions of comparative health or disease. If we desire a simple emetic action, without further and remoter effect on the economy, it would be proper to administer

[6] *Lancet*, July 23, 1870.

Ipecacuanha (perhaps with Sulphate of Zinc). It is often judicious to combine "salines" with vegetable purgatives. The evidence seems strong that Croton Oil sometimes gives very unexpected relief in cases of obstinate sciatica. It causes the evacuation of black fæces, accompanied by severe tormina;—hence the theory of the connection of most neuralgiæ and an impacted state of the *valvulæ conniventes* of the colon.[7]

(42) Astringent medicines are derived from the vegetable and mineral kingdoms; the most powerful belong to the latter, by virtue of more positive chemical affinities. We administer these medicines to relieve painful diarrhœa or dysentery, painful menorrhagia, and certain catarrhal states of the bladder which are accompanied by pain.

(43) In a single paragraph I can put together a number of drugs and preparations which have (or are supposed to have) influence over certain kinds of pain (omitting, for brevity of space, all bibliographical references). The action of Alkalies in mitigating the pain of acute rheumatism is well known. Acids and Alkalies relieve respectively certain forms of dyspepsia. Aromatic Spirit of Ammonia is often combined with ether; and the large class of Aromatic Stimulants including Anise, Ginger, Cloves, and Mint, are in popular demand for the troubles of flatulent colic. Dilute Hydrocyanic

[7] The practice is associated with the name of Mr. Hancock, and some apposite cases are related by Dr. Sewell in the *Canada Medical Journal*, Dec. 1864.

Acid, given in an effervescing draught, is a good medicine for some stomach infirmities. Creasote may allay the pain of dysentery, and Chlorodyne, though a secret compound, is in much professional request.[8] Dr. Symonds prescribed Chloride of Sodium for that variety of *migraine* known as "bilious headache." Guiacum and Sulphur are old-fashioned remedies for some forms of rheumatism: and the former has been recommended for dysmenorrhœa. Sumbul is hardly alluded to in the text-books, but it has some virtues against bronchial spasm. Eucalyptus Globulus is mentioned by Dr. Maclean, of Netley, as capable of allaying pain, calming irritation, and producing sleep. Verbascum Thapsus is recommended by Dr. Gardner for some cases of asthma. An infusion of Triticum Repens relieves constant and severe irritation of the bladder (Sir H. Thompson): and Gelsenium is said to do the same. The Winter Cherry (*Physalis Alkakengi*) is said to appease gout more efficaciously than colchicum. Borax, Senega, and Acetate of Ammonia have all been alleged to do good in dysmenorrhœa; and Apiol has been spoken well of in France. Coca is a new remedy for colic and dyspepsia. The Prunus Virginiana sustains its reputation as a calmative of nervous irritability in gastralgia and heartburn. Propylamine was first introduced by Awenarius, of St. Petersburg, and called by him a specific for rheumatism; and Dr. Gaston found that the pain and fever of this disease were greatly

[8] An approximative analysis of Chlorodyne is given by Mr. Edward Smith in the *Pharmaceutical Journal*, Jan. 1870.

ameliorated by it. But its extreme repulsiveness of taste and smell must be a bar to general use.

Many other medicines are constantly administered by medical men for various purposes, an auxiliary (and partly accidental) effect of which is to relieve pain, or uneasiness, or irritability.

(44) Natural Mineral Waters have their uses in helping to shorten the long chapter of human suffering. The Chalybeate waters contain iron, and we know what iron can do. The Acidulous or Carbonated waters are suitable to atonic dyspepsia, and by reason of their alkaline salts may relieve the pain of chronic rheumatism and gout. The Saline or purging waters remove the uneasiness which attends congestion of the portal system, and may mitigate the pain of some urinary diseases. The Sulphuretted waters are beneficial in some cases of chronic rheumatism, but have a popular fame probably beyond their deserts.

(45) The regulation of Diet is of paramount importance. I have written of the utility—nay, the necessity—of dietetic fats; and therefore we should try to coax the "martyr to neuralgia" to consume a large quantity of milk, cream, butter, and the fat of meat. Headache is a notorious result of animal food taken at improper times. A careful selection of food moderates a number of difficulties in the chest—notably asthma, and the distressing panting of chronic bronchitis and of heart disease. Dr. Sibson has pointed out how the pangs of aneurism of the aorta may be soothed by a restriction in the quantity of fluid swallowed. Innumerable are

the miseries of indigestion and colic which can be prevented and cured by attending to the functions of mastication, insalivation, and deglutition ; and by a skilful adaptation of the mysteries of the cook's art to special difficulties and needs. Dr. Brown-Séquard indicated a sound plan of treating certain forms of dyspepsia by small and very frequent quantities of nourishment. The subacute worries of constipation and diarrhœa can be controlled or even removed by the influence of diet upon the duties of the alimentary canal. Finally, the temperature of the food taken, the hours of meals, and the purity of every article consumed, make up a hygienic total which ought to be well weighed by the conscientious physician, and which may help our efforts in a significant measure to alleviate or annihilate Pain.

(*b*) I have now to describe medicinal and other means which may relieve pain when introduced into the Rectum.

It is unnecessary here to discuss the question of the absorptive capacity of different tracts of intestinal mucous membrane. We must never expect a perfect transference of vital functions from stomach to bowel ; gastric anatomy and physiology are specific in their design, and true gastric digestion can take place nowhere but in the stomach. But when the stomach cannot for any reason retain and assimilate food, it very often rebels also against every form of medicine—at the very time, perhaps, when medicine is most required. In the case of food, we may overcome the difficulty for

a time by nutrient enemata; and for the introduction of medicine into the system we have an even larger choice of methods. Before the hypodermic use of remedies was known, it was much more common than it is now to make enemata the vehicle of drugs; and many medical men continue the practice partly in ignorance of the advantages of the hypodermic method, and partly because this method is not always agreeable to the patient. Moreover, the use of hypodermic apparatus requires in many cases professional superintendence, which is sometimes impossible or inconvenient to supply just when it would be most acceptable.

We see, then, that there will be always room for the application of medicines by injection into the bowel. Two purposes are to be kept in view: (*α*) a remedy for pain is put into the rectum with the intention of affecting the whole system: (*β*) a remedy for pain is put into the rectum with the intention of acting principally on neighbouring organs and tissues. The latter reason is that which most frequently guides us now; but we shall discover ample scope for the exercise of the former principle in some of the emergencies of acute and chronic disease.

Two Suppositories were ordered in the British Pharmacopœia, published in 1864; this number was increased to four in the second edition of the Pharmacopœia, published in 1867. Three more are published in the "Additions to the British Pharmacopœia, 1874." The "Suppositoria Morphiæ," the "Suppositoria Plumbi Composita," and the "Suppositoria Morphiæ cum

Sapone" are those which interest us now. Six forms of Enema are provided in the Ph. B. of 1867; of these we shall have to speak mainly of the "Enema Opii."

Now the injection of merely a warm fluid—like starch or gruel—into the bowel, may soothe the system and render it less susceptible to pain. Add to this injection the tincture or the wine of Opium, and it becomes a potent medicated draught, gradually absorbed and appropriated by the body. A mucilaginous enema with opium is of much service for the pain and irritation of diarrhœa and dysentery; the special seat of these diseases may be sometimes approached in this manner better than in any other. Dr. O'Beirne first proposed the use of large enemata for dysentery, 4 or 5 pints being thrown into the colon by means of a long flexible tube introduced *per rectum;* a collateral advantage of this plan is that it tends to remove irritating matters. Dr. Eisenmann advised enemata of 3 or 4 quarts of water at blood-heat for the purpose of alleviating the pain of abdominal inflammations (peritonitis, hepatitis, and nephritis), and of colic.[9] The same plan was proposed by Cullen to mitigate the terrible suffering of intus-susception of the bowel, and possibly to cause reduction of the invaginated part. And for the agonizing cramps of cholera emollient enemata should not be forgotten.

Certain metallic substances, such as sulphate of

[9] *Bull. de Thérap*, vol. lv. p. 542. Dr. Prout advised the free injection of warm water into the bowels during the passage of renal calculi ("On Stomach and Renal Diseases," p. 312).

copper and nitrate of silver, may be added to any of the enemata employed for the purposes named above. There are some powerful vegetable astringents which are almost, if not quite, as effective. And enemata containing oil of turpentine enjoyed at one time a great repute for allaying various abdominal sufferings, especially colic and the spasms caused by urinary stones.

An abundant warm water injection is very soothing to the adjacent organs. The pain of local cancer may be thus relieved; and (as Dr. Ringer says) we may pacify the very distressing desire to evacuate without any riddance of fæces which occurs in intestinal cancer.[10] Warm injections allay the pain of cystitis, prostatitis, abscess of the prostate gland, and pelvic and abdominal pains generally.[1] Dr. Tilt recommended warm opiate enemata for the relief of painful subacute ovaritis and painful menstruation. Sir Henry Thompson advises the addition of conium to opium, by enema or suppository, in cases of malignant disease of the prostate gland. And for sundry painful troubles of the bladder, not necessarily connected with inflammation, Dr. Todd urged that opium should be given in the form of enema injected into the rectum; the enema being composed of a decoction of starch, of which not more than $1\frac{1}{2}$ or 2 ounces should be employed at one time. The strangury caused by cantharidine, and the irritability of bladder which is the result of gout, are admirably

[10] *Op. cit.*, p. 439.

[1] *Ibid.* Opium and henbane are recommended by Sir H. Thompson.

treated by this warm internal poultice.[2] And M. Ducros, a French physician, says that he has cured obstinate cases of sciatica by enemata containing oil of turpentine.[3]

Dr. Handfield Jones has described a form of abdominal neuralgia which is not always easy to distinguish from peritonitis, lead colic, and hysteria. He insists that the region of the abdomen, probably its peritoneal lining, is liable to suffer from neuralgia and hyperæsthesia (?), which may be attended by a high temperature, and even pass into peritonitis. Dr. Addison has, in fact, written on the same disorder in connection with uterine irritation. It is impossible to reproduce all the noteworthy points of Dr. Jones's paper, which is here mentioned on account of the remedy in which he places most confidence—an opiate enema.[4] In doubtful cases, after ascertaining that the bowels have been sufficiently cleared, Dr. Jones advises the use of an opiate enema before applying leeches; pain is relieved at the same time that the diagnosis is at least partially declared.

Suppositories are much to be commended if only for facility of use. In the rectum there are countless shades of discomfort graduating upwards to acute pain, and not always following defæcation, which can be met with local precision and directness by morphia suppositories, or by a bolus containing the powder or extract

[2] "Clinical Lectures on Urinary Diseases," pp. 375, 376. Personal experience enables me emphatically to ratify Dr. Todd's practice.

[3] *Brit. and For. Med. Chir. Rev.*, ii. p. 569.

[4] *Lancet*, Nov. 19, 1870.

of opium. The same means may vanquish some forms of painful diarrhœa arising from emotional irritability or reflex disturbances. And if the worries of hæmorrhoids be not at least partially subdued by cold water injections, a morphia or lead suppository may be introduced with the expectation of a fair amount of success.

At a recent meeting of the *Société Thérapeutique* in Paris, Dr. C. Paul stated that he had used chloral in the form of suppositories for the pain of cancer; each suppository containing 15 grains of the salt.[5]

In certain painful diseases which by a sort of local accident block up the æsophagus or otherwise impede deglutition, remedies may be got into the body sometimes *per rectum*, sometimes by the hypodermic method.

It is necessary now and then to feed a person exclusively by enemata. We may not only quiet the pain of a gastric ulcer, but we may even cure it by granting the stomach a complete physiological rest, and withdrawing entirely the materials for gastric digestion. But if continued too long, the remedy may be worse than the disease, for it may lead to fatal starvation. Still, the horrible pain of a stomach cancer, or of some other mortal disease in or near that organ, may compel this method of feeding to be altogether resorted to during the brief residue of life. And pain is checked even when life is very little prolonged. Dr. Anstie tells us a very interesting case in which a patient, suffering severe

[5] *Lancet*, March 14, 1874.

agony from peritonitis, derived rapid relief from the gradual and careful injection of rich soup into the rectum. In other inflammatory affections attended with acute pain, the plan of injecting food into the rectum might be tried, and with good prospect of success; because the system is suffering in many of these cases from the inability of the stomach to retain food.[6]

Section II.

(B) Medicines may be introduced into the Genito-urinary canal for the purpose of alleviating pain.

(*a*) Into the Genito-urinary tract of the Male. Nothing put or poured into the urethra can ever pass upwards beyond the bladder; the ureters and kidneys are inaccessible from the outside.

Catarrh of the bladder (however caused) is a disease in which there are always local symptoms more or less pronounced:—these are, distressing irritability, supra-pubic pain, pains in the sacrum, perinæum, and thighs. The judicious use of the catheter is one of the most effective means at the command of the surgeon; because whenever the slightest obstruction exists to the free passage of urine, there is the risk of the secretion being slightly decomposed, and consequently irritating to the lining membrane of the bladder. And so the original evil is liable to be aggravated. To ensure a regular and complete evacuation of the bladder is, therefore, an important thing to begin with. Then we may remove

[6] "Stimulants and Narcotics," pp. 115, 116.

morbid deposits by injecting warm water, and washing out the interior of the viscus; this gives the patient great comfort.[7] Increased benefit may be sometimes obtained (says Sir H. Thompson) by cautiously impregnating the water so employed with astringent or sedative agents, such as acetate of lead, nitrate of silver, and nitric acid.[8]

To allay much pain Sir H. Thompson uses anodyne solutions of the extracts of conium, hyoscyamus, and opium. He recommends the following formula:—dissolve ʒj of each of the extracts of conium and hyoscyamus, and ʒss of the extract of opium, in *f* ʒij of proof spirit and *f* ʒxiv of water: of this solution add a sixth or a fourth part to *f* ℥iij of warm water for an injection to remain in the bladder five minutes: two-thirds should be permitted to flow out, and the catheter withdrawn; the rest is retained in the bladder. On all occasions of washing out the bladder only 2 or 3 fluid ounces of liquid should be injected.[9]

In vesico-intestinal fistula, to wash out the bladder occasionally with small quantities of tepid water contributes greatly to the patient's relief. Villous growths in the bladder may require a similar treatment, the injected solution being rendered slightly astringent. Cancer of the bladder may need opiate injections.

[7] This was a favourite device of Sir B. Brodie's ("Diseases of the Urinary Organs," p. 110).

[8] How much may be done by constitutional treatment for the troubles of cystitis may be learnt from Dr. George Johnson's admirable sketch in *Brit. Med. Journal*, May 31, 1873.

[9] Holmes's "System of Surgery," iv. p. 346.

Few agonies are more intolerable than those of stone in the bladder; and much investigation has been bestowed upon the local use of lithontriptics, *i.e.*, the injection into the bladder of chemical solvents of stone. Sir H. Thompson has not much praise for this method of treatment,[10] and says that the solution, if strong enough to be of any use, endangers the coats of the bladder; and, when diluted, its action is extremely uncertain. Dr. W. Roberts speaks more encouragingly, but allows that the scope of the treatment is within rather narrow limits; and that it is applicable only in those cases of vesical calculi in which the urine is acid, the stone not large, and its composition known to be uric acid, or strongly suspected to be such.[1] However, Sir B. Brodie has shown that phosphatic calculi might be greatly reduced in size, if not dissolved, by injecting a weak solution of nitric acid. Dr. Hoskins used a weak solution of acetate of lead (gr. i. *ad* ℥i) with a mere trace of free acid. With a phosphatic stone double decomposition occurs; phosphate of lead (in the form of a fine granular precipitate) and an acetate of lime and magnesia are formed. Results of high practical importance may be expected from a prosecution of the same researches, and I may here allude to a detailed account of experiments made by the Rev. W. V. Harcourt upon himself.[2] It seems probable that

[10] *Op. cit.*, p. 451.

[1] "A Practical Treatise on Urinary and Renal Diseases, including Urinary Deposits" (1865), p. 249.

[2] *Medical Times and Gazette*, Oct. 23, 1869. A valuable summary of this subject is given by M. Pelouse in the fourteenth volume of the "Comptes Rendus" of the Académie des Sciences.

the solvent treatment, judiciously carried out, may prove a useful adjunct to lithotrity; and there can be no harm in the free use of plain warm water, by introducing it through a double catheter and keeping up a continued stream for half an hour every two or three days.

The surgeon's art is, after all, the most radical in the management of the pains and perils of stone in the bladder.

For the painful irritation of acute gonorrhœa, a variety of soothing injections may be recommended. That which in my own experience seems most useful is composed of *Liquor Plumbi Diacetatis*, Glycerine and Lime water. Glycerine of Tannin is sometimes very efficacious. Extract of Opium in solution may be added to either of these; and particular care is needful in the mode of application, as the efficacy of the lotion depends entirely upon its free and repeated application to the whole of the diseased surface.[3]

(*b*) Into the Genito-urinary tract of the Female.

Fibroid tumours of the uterus are the cause of much suffering. Dr. Meadows points out that pain and hæmorrhage are generally in inverse proportion to one another; and if pain predominate the tumour will most likely prove to be subperitoneal. He recommends us to apply the anodyne remedies as nearly as we can to the seat of pain. Hence the employment of medicated vaginal pessaries; using, as the basis of the pessary, gelatine and glycerine in the proportion of one part

[3] Dr. Druitt's "Surgeon's Vade-Mecum" (1870), p. 164.

of the former to four of the latter; and into this we can introduce atropia, morphia, or conia. When used *per vaginam*, these medicines are more effective, and certainly do not produce so much constitutional disturbance as when given in other ways.[4] Dr. Tanner used with the same object medicated pessaries in which the butter obtained from the theobroma cacao nut was the material used for holding the drugs together: among the substances so applied were mercurial ointment, extract of belladonna, extract of conium, and iodide of potassium.[5] And pessaries in which is incorporated the extract of opium or belladonna are employed for dysmenorrhœa and "ovarian irritation" by Dr. Barnes.[6]

Injections occupy an important place in the treatment of painful uterine diseases; chiefly, however, as adjuvants to a higher class of remedies. Here again we find solutions of belladonna and opium to be of most service, and to these may be added *Liquor Plumbi Diacetatis* and perhaps dilute hydrocyanic acid. As simple emollient applications for relieving irritation, milk and water, linseed tea, barley water, and thin starch or gruel, are very valuable.[7] To allay the pain of ulceration of the *os* and *cervix uteri*, Dr. Lloyd Roberts uses very weak solutions of carbolic acid, on the ground that it possesses in an equal degree with the stronger

[4] *Brit. Med. Journal*, Dec. 2, 1871.

[5] *Lancet*, Oct. 11, 1862.

[6] "A Clinical History of the Medical and Surgical Diseases of Women," pp. 218 and 292.

[7] Mr. Ellis, in the *Lancet*, May 31, 1862.

caustics the property of changing the vitality of the tissues and dissipating inflammation and hypertrophy.[8] I find the following lotion very serviceable in these cases :—

Glycerin : Acid : Carbol : . . ʒij
Liq : Plumbi Diacetatis . . . ʒiv
Liq : Calcis . . . . . *ad* ℥viij
M. ft. Lotio.

In the instance of a private patient afflicted with a soft bleeding cancer of the uterus, the assiduous use of this injection stopped for a time all pain and hæmorrhage. Dr. Churchill says that he can relieve the pain of "corroding ulcer" of the uterus by the local application of such caustics as nitric acid, muriate of antimony, chloride of zinc, and iodine, even though it is impossible to get the ulcer to heal; while in "advanced cases" temporary benefit may be obtained from vaginal injections of nitrate of silver.[9]

Dr. West has not much to say in favour of the local employment of the vapour of chloroform, even by means of Dr. Hardy's "very ingenious contrivance;" and he is equally disappointed with the effects of a stream of carbonic acid gas.[10] To the latter agent attention was first directed by Sir James Simpson, who spoke of its results as uncertain, although in some cases the success that followed its use was striking and

[8] *Practitioner*, Oct. 1868.
[9] "On the Diseases of Women" (fourth edition, 1867), p. 298.
[10] "Lectures on the Diseases of Women" (third edition, 1864), p. 395.

immediate.[1] M. Bernard has obtained some decisively good effects in a few cases of uterine carcinoma, followed by a great improvement in the state of the womb and by a partial cicatrization of the ulcer.[2]

Acute inflammation of the vagina following labour should be treated with injections of tepid milk and water, or of a weak solution of acetate of lead.[3] Gonorrhœal inflammation must be treated in a similar way.

Dr. Graily Hewitt has graphically described the condition of a patient suffering from "irritable uterus," which he believes to be nothing more or less than a retroflexion of the uterus in an aggravated form.[4] This state of things is to be remedied by reducing the flexion, and then all the symptoms disappear which arise from engorgement of the uterus, compression of the nerves which course through its tissues, and stretching and dragging of the peritoneum. A mechanical element of treatment here comes into play, consisting in the application of a suitable form of pessary. The literature of uterine pessaries is of appalling magnitude; and the object of this treatise is to indicate principles rather than to delineate those details which can be learnt from the proper text-books. Pessaries of convenient shape and size relieve other painful conditions of the uterus caused by misplacement of the organ.[5]

[1] "Obstetric Works," vol. ii. p. 769.

[2] Quoted by Dr. West from *Archives Gén. de Méd.* Nov. 1857.

[3] Dr. Churchill, *op. cit.*, p. 623.

[4] *Practitioner*, August 1868.

[5] The question of uterine pessaries is discussed by Dr. Barnes with fairness and ability in his previously cited work.

A desperate neuralgia sometimes afflicts the female urethra and orifice of the bladder. But very often what seems to be a pure neuralgic affection depends upon minute ulcers in the urethral mucous membrane. By an ingenious contrivance Mr. Ashwell washes the whole tract of membrane with a strong solution of nitrate of silver: and by this plan he cured a very severe case of the disorder.[6] I obtained equal success in an exceedingly obstinate case by the passage of a soft bougie every night and morning.

Section III.

(C) Medicines may be applied to the Respiratory tract of membrane for the purpose of alleviating pain.

(*a*) By Inhalation.—A medicinal vapour is inhaled for the sake of its local effect in allaying pain or uneasiness in the larynx, trachea, bronchial tubes, and lungs; or for the sake of its anæsthetic effect on the system generally.

(1) The inhalation of warm aqueous vapour is highly serviceable, as an emollient remedy, for irritation of the tonsils and of the respiratory canal generally. Spasm and irritability of the bronchial tubes are lessened by the patient inhaling watery vapour impregnated with henbane, stramonium, and camphor. The inhalation of spray or pulverized fluids has been used for the same purpose. The physician has a large choice

[6] *Medical Circular*, Aug. 22, 1855.

from the medicated "Vapours" described in the pharmacopœia of the Hospital for diseases of the Throat.

(2) But the breathing of an anæsthetic vapour is much more often done with the intention of rendering a sufferer more tolerant of pain, or less capable of feeling pain acutely. Studying the question from a medical point of view, we find that Chloroform vapour holds its ground for its ready utility and collateral advantages. Systematic writers on Neuralgia may appear to disparage the inhalation of Chloroform because it does not give us that complete mastery over Pain which we rightfully crave.[7] But it is good to do what we can, even if we cannot do all that we would. And no professional retrospect gives me more satisfaction than the quantity of positive suffering which I have been able to alleviate through the mercies of that "sweet oblivious antidote," Chloroform. The practitioner who always carries a little store of Chloroform about him will joyfully discover many opportunities which he did not expect for his benevolent intervention. There are aches and pains which do not rise to the nosological level of Neuralgia, but which for their sharpness compel our attention and engage our skill. Thankful we are when this sharpness is compensated by shortness of duration; but there may be time to produce symptoms of real and profound collapse. Our pressing need is, therefore, for some agent which acts quickly and yet within certain limits quite safely. Perhaps we suspect

[7] See Dr. Chapman, *op. cit.*

hypodermic medication as neither safe nor suitable for a given case; and then we turn with instinctive hope to the large class of anæsthetic vapours.[8]

Physicians can righteously envy the magnificent use which Surgeons have made of Chloroform for their own works and ways. If a slender surgical necessity justify our making a person unconscious for a period however brief, we may lawfully use the same means for deadening a pain caused by Nature's errors:—errors they seem to our short sight, but often they serve a right and wise end. There are some medical agonies hard and cruel, which come without warning, and which prostrate by their suddenness as much as by their severity. When a strong man is "knocked down" by the spasm caused by the passage of a bile-stone, the inhalation of Chloroform is the next best thing to hypodermic morphia, and sometimes it is even better. A drachm or two of Chloroform may suffice to bring the desired relief, which comes as suddenly as the pain itself. Dr. Kidd explains the *rationale* of the cure by supposing that the inhalation relaxes the muscular fibres of pylorus and duodenum, gall-ducts and diaphragm, and so allows the bile-stone to pass.[9] Equally beneficial is this use of Chloroform for the worst sufferings of asthma (Drs.

[8] "Those [drugs] she has
Will stupify and chill the sense a while:
Which first, perchance, she'll prove on cats and dogs;
Then afterward up higher; but there is
No danger in what show of death it makes,
More than the locking up the spirits a time,
To be more fresh, reviving."
—*Cymbeline*, act i. scene 6.

[9] *Dublin Quarterly Journal*, Aug. 1866.

Todd and Hyde Salter) and whooping-cough; and it may indirectly remove epilepsy by blunting the hypersensibilities which excite the fits.

Chloroform-inhalation has been resorted to in the first stage of cholera, and with considerable success. It has been used also during a paroxysm of severe dysmenorrhœa.

For the restlessness and misery of slowly dying, the breathing of Chloroform offers many consolations. Dr. Buller has discussed this subject,[10] and no one can now doubt the possibility of wonderfully mitigating the final sufferings of aneurism, cancer, and some incurable diseases of viscera. Chloroform indirectly soothes the mind, and Dr. Buller quotes an interesting case in which under its mild influence "the patient was more like herself in the more tranquil periods of her life, and altogether different from that restless and depressed condition which, as her bodily powers failed, added so much to her sufferings." The agony which attends rupture of the stomach and bowels is so severe that any amount of Chloroform which gives ease is justifiable; it must be administered as long as life exists, and when its relief has been fully experienced, we may be sure that the patient will insist on its continuance until the fatal end.

Dr. Buller's instructions on the inhalation of Chloroform cannot be improved, and I have adopted them for some years with advantage. The medical attendant should drop 20 minims on a handkerchief, which

[10] *Brit. Med. Journal*, July 7, 1866.

must be held before the mouth and nose at such a distance as to admit air, but not far off; and the patient is then directed to breathe naturally. If it irritate or nauseate, or be in any way very repugnant, these are probably unfit cases. If it soothe, and the patient ask for it again, it may be very safely entrusted to a careful nurse or female member of the family; giving clear directions that at first no more than 20 minims should be poured on a handkerchief at a time, and this must be held at a certain distance from the face. The pulse and breathing ought to be closely watched. Too frequent supplies of Chloroform should not be conceded to the mere importunity of a patient when there is little or no pain.

A person afflicted with pulmonary consumption often slowly dies by days and hours; to him or her the occasional and judicious inhalation of Chloroform is a bright and happy blessing.

In Midwifery practice I have administered Chloroform vapour largely. Dr. Rigby's rule is a good one to follow in the conditions of natural Labour—draw the line, he says, between allaying pain and destroying consciousness. A patient may then be kept sufficiently under the influence of Chloroform for any length of time, and yet be able to hear and answer questions; she may even say—"I have a pain, and yet I do not feel it."[1] My impression is that, thus administered, Chloroform diminishes the force of the pains, but not their number: and it is of priceless

[1] *Medical Times and Gazette*, Sept. 18, 1858.

value to many women by whose highly-organized nervous system pain is badly borne. In some departments of operative Midwifery, the inhalation of Chloroform is an absolute necessity.[2]

Dr. B. Richardson's suggestion that Spirits of Wine should be added to Chloroform, not to dilute it, but (for chemico-physical reasons) to render its inhalation more safe, is of practical importance, and has not received sufficient attention. It is a pleasure to acknowledge the feeling of security which this simple precaution affords. Mr. I. B. Brown recommends a preparation composed of one part of rectified spirits of wine with two parts of Chloroform, and he says that it "allays all pain during Labour, but does not produce total insensibility." [3]

(3) Ether runs a close race with chloroform, and keenly have their respective merits been debated. From a medical stand-point, we may allow some useful properties to ether as a "stimulant-sedative;" and without producing any anæsthetic phenomena, a few whiffs of ether may quiet spasm and pain, and induce a general tranquillity of the nervous system.[4] The tendency to pain may gradually and notably diminish, and sleep is thereby encouraged.

[2] The subject of Chloroform-anæsthesia in the art of Midwifery has been illustrated by Dr. Hall Davis and by Dr. A. E. Sansom. Some good rules by Dr. Dougan Clark on the use of anæsthetics during parturition are to be found in the *Amer. Journal of Med. Sciences*, Jan. 1872.

[3] "Obstetrical Transactions," vol. vii. p. 208.

[4] The case of Sir Frederick Pollock is related in the *Practitioner*, Dec. 1869. In a note Dr. Anstie speaks of the probable advantages of ether-inhalation to aged persons who suffer from an irritable state of decaying nervous system.

It is impossible in this treatise to enter upon the large question whether Chloroform or Ether be the better agent to cause anæsthesia for surgical purposes. The literature of this topic is vast, and there is a national partizanship almost political in its eagerness and depth. The papers and correspondence contained in the medical journals during the last three years will supply material to the busy enquirer.[5]

(4) Early in 1870 Dr. Richardson made a communication to the Medical Society of London on the production of rapid general anæsthesia for short surgical operations; and at the same time introduced a new anæsthetic compound for this purpose. He repeated his objections to nitrous oxide gas, on the ground that it excludes all atmospheric air during inhalation, and acts by producing asphyxia, which is called a rude and vulgar process, retrogressive in science. Personal experiment led him to speak strongly in favour of Methylic Ether, as it caused rapid anæsthesia, and he recovered almost instantaneously without nausea, headache, or other unpleasant symptoms. And for theoretical reasons Dr. Richardson considered Methylic Ether superior to Bichloride of Methylene, as this belongs to a dangerous family of chemical substances, which sometimes produce muscular spasm and syncope. But Mr. Spencer Wells appears

[5] A debate took place a few years ago at the Harveian Society on the relative merits of Ether and Chloroform, and some remarks by Dr. C. Kidd are worth attention. See "Half-Yearly Abstract of the Medical Sciences," vol. lvii. p. 138. A paper by Mr. Clover should be consulted in *Brit. Med. Journal*, Feb. 14, 1874.

very favourably impressed with Bichloride of Methylene, and I hear similar opinions from many other surgeons.

(5) In dental surgery Nitrous oxide gas holds and extends its ground, notwithstanding certain manifest objections to its use from the way in which it acts. But it is admirably calculated to abolish the brief calamities which the dentist inflicts upon us, and I have personal reasons for being grateful to its kindly aid.

(6) Amyl Hydride is another anæsthetic vapour discovered by Dr. Richardson, and described by him as causing an anæsthetic sleep of a satisfactory kind.

(7) Nitrite of Amyl was first used by Dr. Brunton, and to him belongs the "rare merit of inferring correctly its therapeutic effect from its physiological action." It relaxes the whole arterial system, probably by partially paralyzing the sympathetic ganglia and motor nerves: and hence was deduced its utility for cardiac neuralgia, for which Dr. Brunton found it more effectual than any other remedy. This statement has been confirmed by Drs. Richardson, Anstie, and Talfourd Jones. Dr. Madden has given an account of the effect of Nitrite of Amyl upon himself:—the inhalation of 5 minims strangled, so to speak, the anginoid spasm at its birth, so that it did not last two minutes instead of the "old weary twenty." The frequency of the paroxysms was not lessened for some time; but the strength gradually returned, the attacks became less and less frequent, and at length finally ceased. Dr. Madden adds that the angina

pain died out first in the chest, next in the left upper arm, and last of all in the wrist. The violent vascular commotion which the drug causes seems essential to its success.[6] In other quarters Nitrite of Amyl has been highly praised, the inhalation of 6 to 10 minims being found successful in relieving neuralgia of the heart alternating with attacks of asthma.[7] The same plan now and then moderates pain of the fifth nerve.

Dr. Ringer says that he generally administers this drug by the stomach, on the plea that by inhalation we cannot know how much is absorbed. Most patients can take $\frac{1}{3}$ of a minim without any disagreeable result; but $\frac{1}{10}$ or even $\frac{1}{30}$ of a minim produces in some persons the desired effect on flushing. It may be dissolved in rectified spirit, 2 minims to the drachm; and of this mixture, 3 to 5 minims should be taken in sugar every three hours, with an additional dose as soon as a flush begins. Relief generally follows immediately, but sometimes not until the medicine has been taken for a week. As the patient grows accustomed to the remedy the dose must be increased.

(8) For the spasmodic troubles of asthma it has been recommended to inhale Nitrogen, which may be passed through medicated solutions.[8]

(9) The practice of smoking Arsenic for severe asthma has been learnt from the Chinese; in some cases the results are very striking, and even quite curative.[9]

[6] *Practitioner*, Dec. 1872.
[7] Dr. Connor in *Detroit Rev. of Med.*, Aug. 1872.
[8] Dr. Holden in *Amer. Journal of Med. Sciences*, Oct. 1872.
[9] *Lancet*, Aug. 10, 1861.

Stramonium cigars are valuable, but the best way to administer stramonium is to collect the fumes in an inverted glass bowl with a narrow mouth. The bowl, being charged to its full, is placed under the mouth of the patient, who is directed to inhale, to the fullest extent of his power, the smoke which has been collected in the bowl.[10] The smoke of common tobacco, and the fumes of nitre paper, are often very useful. Mr. James Bird has invented a new pipe for inhaling the vapour or smoke of various medicinal substances and preparations, for the relief of asthmatic and anginoid paroxysms, neuralgia, and toothache. Chloroform, opium, datura tatula, and creasote are among the principal remedies which may be inhaled by Mr. Bird's instrument.[1] There is no doubt that the administration of remedies by the air-passages affords a wide scope for doing good, and the Vapours of the British Pharmacopœia add materially to our therapeutic resources.

(*b*) By Insufflation.—This term is applied to blowing a vapour or powder into some cavity or on some particular part of the body. In modern practice we use the term for forcibly inhaling pulverised solid substances (such as alum and nitrate of bismuth) in various painful affections of the larynx and trachea.

For headache and facial neuralgia M. Raimbert recommends the use of a narcotic snuff, composed of $1\frac{1}{4}$ grain of morphia and 16 grains of gum arabic; of

[10] Dr. Aitken on the "Science and Practice of Medicine," second edition, vol. ii. p. 357.

[1] *Medical Times and Gazette*, June 19, 1869.

which 2 to 4 pinches can be snuffed into each nostril (of an adult) within an hour.[2]

The irritation of the so-called hay-fever may be partially relieved by forcibly drawing up the nostrils water holding camphor in solution, or water to which has been added a little spirits of wine.

Section IV.

(D) Medicines may be applied to or under the Skin for the purpose of alleviating pain.

Local effects are sometimes desired, as when we apply a blister to the skin over a painful viscus or bone. Constitutional effects are sought when a medicine is rubbed into the skin in order that it may be absorbed and influence the whole system.

Dr. Pereira described three methods of applying medicines to the skin : (*a*) the enepidermic, (*b*) the iatraleptic, (*c*) the endermic.[3] To which we have now to add (*d*) the hypodermic method.

(*a*) The Enepidermic method consists in the application of medicines, unassisted by friction.

(1) Several useful Plasters are contained in the British Pharmacopœia ; of which the most serviceable for the relief of pain are the plaisters of opium and belladonna.[4] Their effect, mild and equivocal as it must always be, is

[2] *Practitioner*, March 1869.

[3] "Elements of Materia Medica and Therapeutics" (1849), vol. i. p. 126.

[4] Dr. Eade, *Medical Times and Gazette*, July 20, 1867.

due partly to the protection of the skin from vicissitudes of temperature.

(2) Blisters have a much more certain power. Dr. Graves was (so far as I know) the first physician who used blisters to soothe the pain of arthritic rheumatism.[5] But he applied them when the local pains, swelling, and tenderness, had been partially subdued by other means. Dr. Herbert Davies advises the blisters to be put near to (not upon) every joint inflamed, at the very height of the inflammatory stage, when the local pains are most severe, and the constitutional disturbance the greatest.[6] The blisters vary in width according to the locality, but are to be put around each limb; they should be allowed to remain until they have thoroughly acted; and linseed-meal poultices subsequently applied will promote a sufficient flow of serum. In a subsequent paper in one of the medical journals,[7] Dr. Davies asks the following questions:—does the blister treatment remove the inflammation, pain, and swelling of the joints quickly and effectively? are relapses rare under this plan? and further, is the heart in the large majority of cases shielded from endocarditis and pericarditis by the method fully and boldly carried out? All these points he answers distinctly in the affirmative. In reply to the further enquiry as to the greatest number of blisters applied at one time, Dr. Davies says that he cannot remember as many as ten being simultaneously

[5] "Clinical Lectures," vol. i. p. 486.
[6] "London Hospital Medical Reports," vol. i. p. 293.
[7] *Lancet*, Aug. 19, 1865.

required; but he has had several most successful cases in which five, six, or eight blisters have been used at one time. Neither in hospital nor in private practice has he heard any serious complaint of the severity of the treatment; the expression commonly used by the patients being that "the pain began to leave the inflamed joints as soon as the blisters began to draw." My experience of Dr. Davies's plan is decidedly favourable, but it is right to add that some writers are not at all enthusiastic in its favour. The use of the *Linimentum Cantharidis* is preferred by some, but my own prepossessions lead me to say a word on behalf of the old-fashioned *Emplastrum Cantharidis.*

The application of blisters, or of blistering fluid, to the neighbourhood of joints afflicted with the pain and swelling of chronic rheumatism or gout, is proverbial for its almost immediate efficacy.

There are a number of diseases of joints, associated with severe structural damage or threatened damage, in the course of which pain is an urgent symptom. As an example, we may take the so-called "strumous synovitis" of children, and watch the unerring result of applying a blister to the cardiac side of a swollen and painful knee or shoulder joint. Adopt the surgical auxiliaries of position and rest: and we shall hardly ever be disappointed of obtaining signal relief from pain. With a like object blisters are occasionally beneficial in the course of rheumatoid arthritis.

Blisters generally relieve the pain of many chronic inflammations, and of *quasi*-inflammatory states: notably

chronic pleurisy and pericarditis, chronic ovaritis, and some sub-acute conditions of brain and spinal cord. It is always worth while to put a blister on the epigastrium for obstinate gastralgia and vomiting. Dr. Churchill says that dysmenorrhœa is often alleviated by applying a blister to the sacrum. The nocturnal pain of syphilitic periostitis is lessened by counter-irritation; and the same means may be used for the congestive aches and pains of chronic otitis and ophthalmia.

It has been long known in a rude way that neuralgia may be greatly benefited by judicious blistering: for it was strongly insisted on by Valleix in his important work on Neuralgia, published in 1841. In herpes zöster, Mr. Plumbe found that the application of a blister over the part where the eruption should next appear, checked the extension of the disease and the consequent pain. This practice is rather hazardous, and we have a safer and surer means of checking the neuralgia of unilateral herpes by laying a strip of blister on the side of the spine corresponding to the seat of pain. I can recommend this plan as a most valuable help to the internal or hypodermic administration of morphia.[8] Dr. Waring speaks of the good effect of applying blisters to the heel for sciatica.[9] Dr. Ringer advises a blister to be placed every second day along the course of the sciatic nerve, reaching in severe cases

[8] It is the desperate intercostal neuralgia left by "shingles" in old people which is best treated by blisters. A beneficial reflex effect is produced by the blister being applied over the posterior branch of the spinal nerve trunk from which the painful nerve issues.

[9] *Op. cit.*, p. 793.

from the buttock to the knee; free vesication is sometimes necessary.[10] The same author remarks that blistering paper usually produces enough irritation to relieve facial or frontal neuralgia; but if the pain continue unabated, a stronger preparation of cantharides should be tried. For cardiac neuralgia, relays of blisters between the shoulders were prescribed by Perceval and others of his time: while Dr. Walshe prefers an application to the præcordial surface of cloths steeped in strong *Liquor Ammoniæ*. The same method of vesication is recommended by Dr. Aitken for some superficial neuralgias. Trousseau called spasmodic facial neuralgia one of the most hopeless of diseases; but Dr. Anstie's vigorous treatment offers a less disheartening prognosis. Counter-irritation is an essential feature of his plan, the blister being applied over the occipital nerve at the nape of the neck. A short respite may be gained which is of "very great consequence in this awful disease; for the mere fact of such pain being allowed to continue is of the worst possible omen."[1]

In 1868, an American dermatologist published a work on "Neuroses of the Skin," which was favourably noticed by Dr. Brown-Séquard. "Dermalgia" is described as manifesting itself in the form of tenderness or increased sensibility to touch, and is generally confined to a limited tract of skin. Blisters are spoken of as likely to be serviceable.

Whether the counter-irritation be employed in the form of what Dr. Graves termed "flying blisters," or as

[10] *Op. cit.*, p. 285.

[1] *Lancet*, Jan. 9, 1869.

a blister which is kept "open" and discharging for a time, must depend upon a variety of circumstances; the chief of these being the constitutional force of the patient, and the effect of the remedy on the pain.

(3) Mustard and Ginger Poultices are familiar forms of counter-irritation, and are often used for the mitigation and removal of pain. A Mustard poultice is more active than a cantharides blister, and more quickly produces vesication; so that it is usually diluted with flour, or bread, or oatmeal. Small mustard poultices, or bits of "mustard leaf" previously moistened with warm water, or pieces of "sinapine tissue," may be placed over the seat of a localized pain. As a so-called derivative, any of these preparations of mustard can be applied to the inner parts of the legs or thighs for the purpose of relieving congestive headaches. In non-inflammatory abdominal pains (such as ileus and colic), a strong mustard poultice put over the whole abdominal surface affords usually much ease. Dyspnœa may be allayed by the same means; and in cases of cardiac neuralgia Dr. Walshe advises mustard poultices to the dorsal spine. Dr. Graves used them for the alleviation of gout. For neuralgic affections of the head and face, a stimulating cataplasm may be placed *secundùm artem:* and a ginger poultice to the cheek is a popular remedy for toothache.

(4) Ordinary Poultices are convenient vehicles of heat and moisture; and, as such, are constantly used for allaying local pain. "Poultices should always be applied as hot as they can be borne, and frequently changed, lest

they become cold and hard." They are always soothing to inflamed tissues, and have a most beneficial influence on inflamed viscera when placed on the surface over the diseased organ. An acute pneumonia or a pleurisy is always relieved by the application of a hot and large "jacket poultice;" and we may try to relieve the suffering of a peritonitis or a pericarditis by the same plan. Over the peritoneum a poultice should be light and thin, and bran is a good material to make it with.

Dr. Ringer mentions poulticing as useful for acute rheumatism, lumbago, sciatica, pleurodynia, and myalgia. When a poultice is removed the skin should be covered with a piece of flannel, and the flannel covered with oiled silk; this after-treatment promotes free perspiration, on which mainly depends the efficacy of the method.[2] Starch poultices are extremely soothing, and may be used for lessening the pains of open cancers, as well as the heat and inflammation of certain eruptions of the skin. A potato poultice for the irritation of scabies is favourably spoken of by Dr. M'Call Anderson.

The pain of a maturating carbuncle or abscess is much diminished by hot small poultices. Linseed poultices are often applied to rheumatic and gouty joints; the heat and pain are generally mitigated thereby.

Fomentations with hot or tepid water (and with water medicated in various ways) are another vehicle of heat and moisture. Opium is the medicament

[2] *Op. cit.*, p. 431

principally employed, but solutions of many other substances are useful. Flannel soaked in these hot fluids, and then moderately wrung out, acts like a poultice, and is much less weighty to tender parts; some impervious material should be put over the hot wet flannel. Spongio-piline is convenient for this purpose. Painful spasm of internal organs, such as intestinal, renal, and biliary colic, may be most advantageously treated by one of these methods.

The pain of phlebitis in one of the limbs is exceedingly well treated by hot water dressing, which should be covered with gutta-percha tissue, and retained by a few turns of a bandage.

The distress of an acute fit of asthma is moderated by steeping the whole chest with flannel wrung out of water as hot as can be borne.[3] Toothache is relieved by washing out the mouth with hot water.

Many forms of headache (including those of the acute specific diseases) are considerably benefited by sponging the forehead with hot water, or even by dipping the whole head into it.

For hemorrhoids attended with irritation and pain, relief is often obtained by sitting over the steam of hot water for fifteen or twenty minutes, and immediately applying a bread and milk poultice. *Pruritus genitalium*, and so-called prurigo of any other part of the body, is alleviated by frequent fomentation with hot water.

The process called "wet-packing" is very much to

[3] Dr. Graves's "Clinical Lectures," vol. ii. p. 87.

be praised for its efficacy in soothing myalgia and chronic rheumatism.

Case 16.—A tradesman's wife, æt. thirty, enjoying fair health, had a chronic pain about the shoulder joint (in June, 1874) the origin and nature of which were obscure. The region of the joint was not enlarged, but the pain was always increased by particular movements. A diagnosis was provisionally made that there was "rheumatism" in some of the tendons; and a hot wet "pack" was ordered on two successive evenings. After one process the pain went away entirely, and the patient has not since been vexed by it.

The good which is effected by hot poultices and hot water is due somewhat to their properties as counter-irritants and "derivatives;" and from this point of view we may proceed to study the action of

(5) Turpentine, the oil of which is often most useful in quieting nerve-pains. A flannel steeped in hot water, and then sprinkled with the oil, is an old and excellent application to the chest during a paroxysm of asthma and *angina pectoris*. Great relief is often afforded in spasmodic affections of the bowels (particularly cholera) by the use of Turpentine fomentations to the abdomen. Turpentine stupes, as they are called (prepared as directed just now), notably allay the suffering of some inflammations of thoracic viscera. Some continental writers speak of Turpentine as a good external application for the pain and swelling of acute rheumatism; but this use of the drug is not to be commended. An equal quantity of yolk of egg and Turpentine is a convenient mixture,

and should be dabbed on the skin with a piece of sponge. Dr. Ringer reminds us that as the smarting arising from the application of Turpentine goes on increasing for sometime after its removal, it should not be kept on longer than just sufficient to excite a moderate degree of pain.[4]

(6) The Tincture and Liniment of Iodine are favourite counter-irritants and "rubefacients;" the two preparations representing respectively mildness and strength. Either will allay neuralgia under some circumstances:—for instance, it is a common and useful practice to "paint" Iodine on the chest for pleurodynia, or for the dull pain of chronic pleurisy. The use of an Iodine lotion for the pain of gouty and rheumatic joints was first proposed by Dr. Davies, and subsequently extolled by Dr. Pereira;[5] it was sanctioned also by Dr. Todd,[6] in whose practice I have seen it employed. I have used the Liniment of Iodine with remarkable success to lessen the pain of "strumous" inflammation of the big joints. It should be painted all around the inflamed joint, in a circle whose width may vary from one to three inches. To Mr. Furneaux Jordan we are indebted for an exposition of the great value of Iodine (as a counter-irritant) in order to arrest the pain and other phenomena of the inflammatory process;[7] and it is his cardinal doctrine that the Iodine shall be put on the skin-territory round the part threatened with congestion

[4] *Op. cit.*, p. 271.

[5] Iodine ℈ij, Spirit of Wine ℥j, Water ℥j, make an effective lotion.

[6] "Practical Remarks on Gout," pp. 107, 108.

[7] See his recent work on the "Treatment of Inflammation."

and inflammation, and not on the part itself. Conceding the originality and truth of many of Mr. Jordan's views, it seems to me that he forgets the possible irritation arising from the Iodine itself, and that he underestimates the importance of internal remedies.

The pain of chronic rheumatoid arthritis is often much alleviated by the outward application of Tincture of Iodine.

(7) Warm and Hot Baths are admirable remedies for Pain. They mitigate or even take away the pain of some internal spasmodic affections—such as biliary, renal, and intestinal colic. With regard to the general object of the relief of Pain, the Bath thermal Waters have an immemorial value. The action of these waters, and the ingenious appliances for utilizing them, deserve a special and local study: the Bath Waters, says a writer of the last century, "are a Medicine, consisting of many ingredients exquisitely united together by the inimitable Chemistry of Nature." [8] Local pains of various kinds, especially lumbago and the aches of muscle-fatigue, are easily and pleasantly cured by soaking for twenty or thirty minutes in water the natural temperature of which is above 100° (Fahr.).[9] Movements of the body in the water increase the therapeutic value of the bath; and its salutary effects are developed more quickly by the hot water being put in motion, *i.e.*, by a douche being directed on

[8] Dr. Baylies' "Practical Reflections on the Uses and Abuses of Bath Waters," 1757, p. 244.

[9] The antique poetic fancy was that Minerva gave Hercules a bath as a soothing reward after his many toils.

the painful part. As a matter of daily experience, recognized particularly by the professional Staff of the Bath Mineral Water Hospital, the torments of lumbago and sciatica are often completely removed by frequent and systematic bathing, assisted by a douche at the same time. What is quaintly termed "dry pumping," or the "dry douche," consists of a stream of thermal water directed on the dry subject, *i.e.*, a person outside the bath; and this is applicable whenever there are specific reasons (such as the existence of visceral disease) why a patient should not bathe. In the last century there was no scientific discrimination of gout, rheumatism, and rheumatoid arthritis; but all sufferers from these diseases were submitted to the healing influence of the Bath Waters, and generally with notable relief to pain. As a rule, no douching should be permitted on a joint which is painful from active inflammation; asthenic gout may be quickened into disagreeable activity, but there is an old consolatory saying that "Bath Waters often cure by exciting fevers."[10] "Palsies from pain" and dysmenorrhœa are among the diseases for which several older physicians advised the Bath Waters, in the form of either external or internal use.[1]

[10] Dr. Baylies, *op. cit.*, p. 250.

[1] Dr. Charleton, "Three Tracts on Bath Waters," Tract ii. pp. 31 and 41. In Tract iii., Dr Charleton candidly says that he could not always distinguish sciatica from "hip-cases," a point of diagnosis which, in the early stage, now and then baffles the clinical skill of our own day. In the "Register of Bath," appended to Dr. Guidotts' interesting "Discourse of Bath and the Hot Waters there," published in 1725, cases are related of painful maladies relieved by bathing, or drinking, or both. It was observed by Dr. William

The Buxton thermal water (the temperature of which does not exceed 82° Fahr.) has a considerable repute in the treatment of some painful varieties of rheumatism. Many foreign spas owe their fame to a natural thermal property.

Used judiciously as means of health and not of luxury, hot and warm baths may greatly relieve the suffering of *colica pictonum*, and we may recommend the same means for the pains and dangers of irritative affections of the kidneys and bladder; of inflamed and strangulated hernia; of spasmodic stricture of the urethra; and of inflammation of the uterus and uterine appendages. The irritation of general small-pox is alleviated by tepid bathing.

The distress of prurigo is much ameliorated by the daily employment of the tepid bath, plain or medicated.[2]

The local thermal bath is used for a variety of purposes. The sitz-bath can be resorted to for any of the local pains just specified; and Dr. Graves ordered the feet and legs to be plunged in hot water for the removal of headache.

Vapour baths are beneficial under proper circumstances; the torments of itch, of lichen ruber, and

Falconer ("A Practical Dissertation on the Medicinal effects of the Bath Waters," 1790, p. 32), that "the more temperate seasons of the year are generally advised for the use of the Bath waters," and good reasons are given for this exhortation. It is worth noticing that the copious local literature of the eighteenth century abounds with speculations on what Dr. J. Mason Good (in his "Study of Medicine") called the "mysterious agency of the Bath Waters."

[2] Mr. Erasmus Wilson on "Diseases of the Skin," p. 270.

of prurigo are signally soothed thereby. Dr. Macartney prescribed the topical use of vapour as a soothing application for painful wounds, contusions and fractures.[3] A stream of warm aqueous vapour relieves otalgia; a funnel should be inverted over a vessel of hot water, and the external ear-passage applied to the orifice of the funnel. Vapour baths can be impregnated with sulphur.

The Turkish Bath has been described as combining many of the properties of the hot and cold bath; and it is used for lessening the pain of rheumatism, gout, and sciatica. Dr. Ringer claims the superiority of the Turkish bath in cases of the following kind:—a patient complains of slight and fugitive pains, the joints, but little swelled, are merely stiff, and somewhat red and hot. The gout often affects many external and internal parts in succession; and in spite of careful diet and abundant exercise the patient may be seldom free from some evidence of gout. After a few baths the pains and swelling disappear, the joints become supple, and the general health improves. As a prophylactic against gout, I am delighted with the occasional effect of the Turkish bath. A gentleman from Devonshire, who came to Bath last autumn for the purpose of using the thermal baths, found (as is sometimes the case) that his chronic gout was made for a time acute and febrile; and so he tried a Turkish bath, at first every day and then on alternate days. The ultimate effect has been to save an infinity of pain,

[3] "A Treatise on Inflammation" (1838), p. 176.

and to prevent any return of gout up to the present time (Sept. 1874).

When the regular Turkish bath is not available, a domestic modification may be substituted which is equally potent in promoting sweating.[4] Dr. Nevins uses a form of steam bath for the treatment of acute rheumatism,[5] and I know nothing more efficacious for the painful pyæmic complications of scarlet fever.

(8) Dry heat is applicable in many ways. Natural warmth and dryness of the atmosphere relieve a host of pains in some people; and it is unfortunate that we have so often to supply these qualities in our climate by artificial means. Hot dry flannel or sand is part of the armamentarium of every nursery, and is often tried for neuralgia and spasmodic pain. Bottles of hot water may be applied to the abdomen to relieve spasmodic pain; and hot bran and hot bricks are used for a similar purpose. Dry wadding or cotton wool is a simple method for preventing or curing rheumatism by maintaining an even temperature of external parts.

(9) Cold is a most valuable anæsthetic agent. It is applicable for therapeutic purposes in three forms:— as cold air, as cold fluids, and in the condition of ice.

Now it is well known that up to a certain point, Cold acts as a local tonic, but if "too long continued,

[4] Dr. Ringer, *op. cit.*, p. 26.

[5] Dr. Wollaston's paper should be consulted in the *Brit. Med. Journal*, Oct. 27, 1860.

or if the cold be excessive, it depresses the part; for, by contracting the vessels, it lessens the supply of blood to the tissues, and thereby diminishes in them cell-growth and tissue-change. If the intense cold be applied for some minutes and all function in the part ceases, sensation is lost. If such a cold application be too long continued, the part dies and becomes gangrenous."

We can understand from this delineation of the action of Cold that the point we should aim at is to obtain its anæsthetic effects, and to stop short of its gangrenous operation. It is like catching a thermometric measure at a certain unit, and fixing it there while we work with it for a specific purpose. Knowledge and judgment are necessary as guiding forces, first to realize, and then to control, the desired result. Nor is it less urgent that we should appreciate by a kind of instinct the best method to be employed, and the circumstances which determine its utility or hurtfulness.

Cold baths are powerful tonics when rightly used; and, as such, they are antidotes to that depression of system which is a source and a product of neuralgia. Cold baths are serviceable for raising nerve-tone from that depression called hypochondriasis; provided always that there is sufficient strength to produce and sustain a proper reaction and glow. A writer of the last century advocated the use of the cold bath during the intervals of the asthmatic paroxysm.[6] The shower-

[6] Dr. Ryan on the "History and Cure of Asthma," London, 1793.

bath is used for the same purpose by Sir Thomas Watson; and other writers have testified to the advantage of the cold shower-bath in relieving congestive and hysterical headaches.

The cold wet sheet has been successfully used in acute rheumatism; or a cold wet compress, renewed every two or three hours, is wrapped around each of the painful joints. Cold irrigation mitigates the pain of an external inflammation. Sea-water, cold mineral waters, and various medicated waters, are employed for general and topical baths, and beneficially raise the tone of the nervous system.[7]

Ice is the most positive and certain medium of cold: and it is now used for a number of purposes in clinical Medicine. We are a great deal indebted to Dr. Arnott in this matter; he originally proposed as a freezing mixture 2 parts of finely pounded ice with 1 part of common salt. This is confined in a gauze bag, and placed in contact with the skin until its sensation be abolished, and it has a shrunken tallowy appearance. This application was employed by Dr. Arnott to prevent the pain of minor operations; but other

[7] Horace relates (Epist. i. 15) that Musa, physician to Augustus, having found cold bathing successful with the emperor, made it his general principle of treatment. He recommended it to Horace, who followed his advice with some reluctance. The line—

"Qui caput et stomachum supponere fontibus audent"—

shows that douching on the head and stomach was a practice which ancient physicians sanctioned, though it would now be thought a strong remedy even by hydropathists. Clusium is mentioned by Horace in the same Epistle, and Strabo enumerates some cold streams here which were useful in many complaints both by bathing and drinking.

surgeons did not speak of its success in this respect with the same confidence. The ice bag is now used in several other cases in which pain is a prominent symptom :—thus it may be laid on the epigastrium to ease the pain of ulcer or cancer of the stomach ; it may be applied to reduce the pain and inflammation of a prolapsed rectum or uterus ; and after an operation for piles or fissure of the anus, pain may be "dulled or removed by applying a small Indian-rubber bag of ice." For most of these objects I have used ice with much success.

Ice allays the inflammation of the throat which attends many acute specific diseases. It should be sucked as constantly as possible, and iced water or milk should be frequently drunk.

Dr. Chapman has introduced the ice bag as a remedy for neuralgia. He applies it to the spine in cases of facial and dental neuralgia ; sometimes he places it across the occiput. Brachial neuralgia is treated by ice along the whole spine. Intercostal and hypogastric neuralgia is mitigated and even cured by ice applied over the dorsal and lumbar vertebræ. A case of mammary, ovarian, and uterine neuralgia is related in which the pain completely ceased when iced water was applied to the vertebral column. Neuralgia of the legs and "general neuralgia" (complicated in one instance with intense irritability of the bladder) seem capable of great relief by Dr. Chapman's plan.[8]

As the spinal ice bag subdues in some cases the

[8] *Medical Press and Circular*, March 4, 1868.

motorial abberrations of Tetanus and Chorea, we should have imagined it possible that it might also check the derangements of the sensory function which we call neuralgia. I have carried out Dr. Chapman's instructions with partial success, and I esteem them important auxiliaries to other means.[9]

The anæsthetic properties of solid cold have been beneficially employed for the alleviation of the pain of Cancer. Dr. Arnott says that congelation, properly applied, always removes or mitigates the pain of a cancerous growth, retards the progress of the disease, and may convert an acute into a chronic affection.[10] As shown by the diminution of pain and swelling, I can joyfully testify to the utility of ice in reducing the activity of a cancer-mass, so that it may be even brought to the condition of quiescence termed by the Dublin surgeons "atrophic cancer." In the removal of cancer, congelation not only prevents the intense suffering that would accompany the action of caustic, but Dr. Arnott points out that it furthers this action by adding its own destructive powers.

Unquestionable, too, is the efficacy of congelation in immediately and permanently relieving the pain of chronic rheumatism.[1] Dr. Arnott quotes a case in which both ankles were affected with pain, heat, swelling, and

[9] In vol. vi. of the "Obstetrical Transactions" is a proposal by Dr. Granville, of Bristol, to apply extreme cold as an anodyne for the pain of parturition. Ice relieves spinal pain in cerebro-spinal meningitis (Dr. Lewis Smith).

[10] *Medical Times and Gazette*, Oct. 25, 1862. See also papers in the *Lancet* during 1854.

[1] *Medical Times and Gazette*, July 14, 1860.

slight redness; the sleep being much disturbed by an increase of pain at night. About three-quarters of a pound of ice, enclosed in a small canvas bag, were by means of a flat-iron broken into a fine powder, and rapidly mixed with about half this weight of common salt. The mixture was then poured into a piece of gauze, and applied successively on both sides of the ankle. The gauze bag covered a circular space of skin of between three and four inches in diameter, and was kept in contact with it for about six minutes. When the patient was seen three days afterwards, she expressed in energetic terms her thanks for the relief which had been given; there had been no pain since the congelation, and no disturbance of the sleep at night. It is important to avoid vesication of the skin by continuing the congelation too long.

In a paper communicated to the *Monthly Journal of Medical Science*, twenty years ago (July 1854), Dr. Arnott enthusiastically urged the application of intense cold to lumbago, sciatica, rheumatic carditis, rheumatic gout, ophthalmia, glandular inflammation in the neck and groin, orchitis, meningitis, and some varieties of neuralgia.

We possess now surer means of producing great cold for anæsthetic purposes. In the early part of 1866, Dr. B. W. Richardson introduced his method of causing superficial local anæsthesia by "ether-spray;" and it was demonstrated by him at the Chester meeting of the British Medical Association in the summer of the same year. The most important element in the success of the

plan is that it supplies a ready means of removing pain arising from short surgical operations or other causes, without any risk to life. Ether-spray promptly relieves some neuralgias, as pleurodynia and lumbago; and is always worth a trial in doubtful cases. Another useful invention of Dr. Richardson's is the "styptic colloid," which may soothe the pain of cancer. (A solution of morphia in "styptic colloid" quiets irritable painful ulcers, and promotes healing; and can be applied to a hollow tooth to stop toothache.) A very light hydrocarbon fluid, called rhigolene, is used extensively in America for causing local anæsthesia.

Dr. Bill, of the United States army, writes favourably of carbolic acid as a local anæsthetic in surgical operations when no dissection of the skin is involved, and when all the pain results from cutting the skin.[2] Even that homely article, oil of peppermint, has been found to allay local pain; and may be painted lightly with a camel's-hair brush over the seat of facial neuralgia or gout.[3] And a lotion composed of bromide of potassium dissolved in vinegar and water, is asserted by Dr. Henry Osborn to diminish the pain of early schirrhus cancer.[4] By these and similar methods cold is produced by greater or less evaporation; and sensory nerves are paralyzed by being robbed for a time of that vital heat which is essential to their physiological integrity.

[2] *American Journal of Medical Science*, Oct. 1870. See also Dr. Andrew Smith's remarks in the *New York Medical Journal*, June 1872.

[3] *Lancet*, Nov. 19, 1870.

[4] *Medical Times and Gazette*, April 16, 1870.

I might quote a number of examples of the use of ether-spray, drawn from my own experiments in clinical practice. Any attempt, however, to elucidate this subject in an adequate manner would prolong this treatise to an unreasonable length, and prevent other topics from being properly discussed.[5]

(10) The local application of Chloroform has been advocated by Dr. Dupuy de Frenelle and by Dr. Aran.[6] Dr. Dupuy says that he has discovered the means of inducing every variety of local irritation by the contact of Chloroform, the revulsive action being necessary to the success of the plan, which is thus described :—A piece of fine linen being saturated with Chloroform is laid over the seat of pain, and with the palm of the hand is kept in close contact with the skin ; but when the pain is limited to one spot—as in some cases of intercostal, facial, supra-orbital, or auricular neuralgia —the pressure of the thumb or forefinger is sufficient. Several successive applications should be made when the pain occupies more than one region, or when it exists along the entire course of a nerve, as in sciatica. In the latter case the Chloroform should be applied over the ischiatic notch, the head of the fibula, or the external malleolus, from the origin of the nerve to its termination. In adopting this method we must not forget the possibility of severe and even injurious

[5] The use of Sulphurous Acid spray for the pain of chilblains has been advocated by Dr. Fergus (*Canada Medical Journal*, June 1872). An Oxygen bath has been spoken of to allay the pain of senile gangrene and irritable ulcers (Dr Léon Labbé, Hôpital la Pitié, *Lancet*, Aug. 2, 1873.)

[6] *Brit. and For. Medico-Chirurgical Review*, July 1864.

vesication, causing a new pain which may not be welcome even in the room of the old. And I believe that we have now safer and quicker therapeutic means. The local application of Chloral to a neuralgic spot has been advised by some American physicians; and equal parts of Camphor and Chloral Hydrate make a clear fluid,[7] which I have painted with some success over a limited painful surface.

The vapour of Chloroform, and of Bisulphide of Carbon in solution, is said to relieve headache when applied in the following manner:—A small quantity of either is poured upon cotton-wool, with which a small wide-mouthed glass-stoppered bottle is half filled. The wool, of course, absorbs the fluid; and, when the remedy has to be used, the mouth of the bottle is to be applied closely to the temple, or behind the ear, or as near as possible to the seat of pain; and so held for three to five minutes. A sensation is soon felt, as if several leeches were biting the part; and in a little time more the smarting becomes rather severe, but subsides almost immediately after the removal of the bottle. The effect of the remedy is generally immediate; but it may be re-applied, if necessary, three or four times in the day. The superiority of Chloroform consists in being much more likely to be at hand, and in having a pleasant rather than an offensive odour.[8]

(11) Eucalyptus Globulus has been used externally

[7] *London Medical Record*, May 7, 1873.
[8] *Brit. Med. Journal*, June 13 and 20, 1868.

for neuralgia, paludal and reflex;[9] but I have no personal experience of this drug.

(12) Dry-Cupping was employed by Dr. Graves to relieve hysterical headaches. The cups should be placed on the nape of the neck, between the shoulders, and below the clavicles.[10] Dr. Graves relates cases of sciatica, lumbago, and neuralgia, which were greatly benefited by this plan. Dry-Cupping alleviates some forms of dyspnœa and asthma. Junod's exhausting boot is a gigantic dry-cupping apparatus.

(13) Moist compresses of lint or linen may be medicated in an almost infinite variety of ways, and applied (hot or cold) over the seat of neuralgic or myalgic pain. Some liquid preparation of opium is a good vehicle of medication; and aconite and belladonna are extremely useful. A solution of cyanide of potassium (1 part in 100 of water) has been recommended. It may be thought desirable to cover the wet compress with gutta-percha tissue. Trousseau used compresses of linen steeped in a solution of Atropia, placed them on the painful parts, and covered all with oiled silk. The application may be renewed several times in the twenty-four hours, and continued for at least an hour each time.

(*b*) The Iatraleptic method consists in the application of medicines to the skin, aided by friction. Now, we may use this method for the sake of a local influence on a local pain; or we may wish a particular medicine

[9] M. Gimbert in *Gazette Hebdomadaire*, No. 40, 1872.
[10] "Clinical Lectures," vol. ii. pp. 315, 548.

to be absorbed into the whole system with the hope of curing or relieving local or general pain.

The Liniments, Solutions, and Ointments in the British Pharmacopœia are the principal official compounds by which the iatraleptic mode of administering medicines can be carried out. Some of these medicines are our most useful and trusted remedies; we fly to them with impulsive haste when we are asked to quiet a pain which flits along the almost visible track of an individual nerve. It must be admitted that the immediate effects of these Pharmacopœial preparations are not at all certain, sometimes quite equivocal, and nearly always rather transitory. Still, they have a definite and decided range of utility; and, moreover, the exigencies of popular Medicine clamorously demand that every area of local suffering shall have its appointed local antidote, real or feigned, quick or slow.

(1) In the old Edinburgh Pharmacopœia there was a fluid stuff called Simple Liniment, made by melting together olive oil and white wax. A meritorious commentator called it an "excellent placebo, when friction is the most important part of the treatment." And this is the logical difficulty in analyzing the effects of Liniments generally. We shall see by and by what a power the Imagination is in the management of painful disorders; and this imaginative force is very much comforted and satisfied when something is done which looks imposing, and which occupies time and trouble. It may be assumed with confidence, that friction helps

the absorption of the medicine so treated; and there is a local element and energy in the process by which a moderate therapeutic success may usually be secured.

The compounds of Glycerine in the British Pharmacopœia are exceedingly useful in their capacity for allaying irritation and pain; the Glycerine of Tannin deserves special commendation.

The Liniments of Aconite, Belladonna, and Opium, are distinguishable for their anæsthetic powers. They are useful for neuralgia in the side connected with uterine or ovarian disorders; and the Liniment of Chloroform may be employed so as to obtain some vesicating effects.[1] We are indebted to Dr. Gueneau de Mussy (a welcome guest at the meeting of the British Medical Association in London) for an excellent local application:—one part of tincture of aconite, two parts of spirits of wine, and one of chloroform.[2] The Liniments of Ammonia and Belladonna are praised by Dr. Purdon as antidotes to Dermalgia.[3] The pain commonly called pleurodynia, and some other superficial neuralgias, are most beneficially treated by hot Liniment of Opium; the skin being afterwards covered with dry wadding or spongio-piline. As a counter-irritant to some dangerous forms of cerebral meningitis, the Liniment of Croton-oil may be rubbed into the shaven scalp with a cloth: pain is relieved, the morbid processes seem to be checked, and recovery

[1] Dr. Eade, *Medical Times and Gazette*, April 20, 1867.
[2] *Medical Times and Gazette*, April 2, 1859.
[3] *Dublin Quarterly Journal*, Feb. 1869.

may occur. Dr. Turner has related some interesting cases,[4] and I confess that I have much faith in the pustular vesication established by Croton-oil. The pain of chronic rheumatism is subdued by Liniment of Ammonia mixed with extract of belladonna. An embrocation composed of ℥iss of compound Camphor Liniment and ℥ss of Laudanum, made warm and rubbed over the abdomen, quickly allays the pains of flatulent colic (Dr. A. T. Thomson). The Liniment of Mercury is used to alleviate the pain of chronic syphilitic nodes. And the compound Liniment of Mustard and the Acetic Liniment of Turpentine have the sharp "rubefacient" qualities of these substances respectively, making them useful agents for the relief of some kinds of pain.

(2) Some of the Solutions (*Liquores*) enumerated in the British Pharmacopœia are employed as external applications. The *Liquor Plumbi Diacetatis* is the most noteworthy for its soothing properties. Many of the anodyne and "sedative" extracts are easily dissolved in distilled water (sometimes with the aid of a little spirits of wine), and form very serviceable lotions. Blotting-paper steeped in *Liquor Atropiæ* may be placed on the brow in cases of troublesome supra-orbital neuralgia. The irritation caused by the sting of bees and wasps is immediately removed by a wash of lime water. The *Liquor Atropiæ Sulphatis* is dropped into the eye to quiet or prevent some of the painful results of intra-ocular inflammation. And

[4] *Edin. Med. Journal*, Nov. 1868.

the *Liquor Epipasticus* is preferred by many medical men to the *Emplastrum Cantharidis.*

Arnica has some doubtful associations, but has been long in popular favour in Ireland and Germany. Mr. Mitchell Henry was enthusiastic in its praise, and applied it with implicit confidence to bruises, to allay the smarting of wounds after operations, to fractures, dislocations, and similar injuries. It does not irritate the skin if employed in proper strength, and no application should be used stronger than 2 drachms of the tincture to an ounce of water, and this only in rare cases and for a short time until pain has abated. The most useful strength is 4 or 6 drachms to a pint of water. Dr. Phillips considers "trimethylamine" to be the active ingredient of Arnica; it is perfectly soluble in water, and, in Dr. Phillips's opinion, spirituous solutions of Arnica should never be used. Arnica has some repute for the abortive treatment of boils.

Friction with a saturated tincture of aconite-root relieves some cases of neuralgia; and for acute gout Dr. Aitken recommends a lotion of tincture of aconite and warm milk, the inflamed part being then covered with cotton-wool. A "Valerian-bath" is a therapeutic whim said to do good to rheumatism.

(3) Ointments are convenient vehicles of antidotes to pain. Ointment of Tartrate of Antimony is less rapid in its vesication than croton liniment, but the results are equivalent in their effect: the Ointment is rubbed into joints painful from chronic inflammation, but is seldom used now. Ointment of Belladonna is in request for

the same purpose; and when combined with Opium Ointment (Ph. Lond., 1851) I have used it during many years for the pain of subacute peritonitis and ovaritis by smearing it generally or locally on the abdomen. Ointment of Mercury has a large sphere of benefit when applied to painful joints; and it is frequently rubbed into the skin for the purpose of affecting the system in some of the painful contingencies of syphilis. Other Ointments of Mercury are used under similar circumstances. Iodine Ointment is a mild counter-irritant for slow inflammations; and the Ointment of Iodide of Potassium (Ph. Lond., 1851) has merits which are, in my opinion, not sufficiently recognized. Sulphur and Styrax Ointments are of proverbial efficacy against parasitic irritations of the skin; and Benzoated Zinc Ointment has a notable soothing influence. Ointment of Aconite (prepared with the alkaloid Aconitina) deserves all the praise that can be said of it.

Case 17.—A married lady, æt. forty, enjoying on the whole good health, though not naturally strong, suffers occasionally from right infra-maxillary neuralgia. For one of these attacks I was consulted in the spring of 1873, and I ordered some freshly-made Aconite Ointment to be rubbed into the lower part of the face at bedtime. Two applications of the ointment quite removed the pain. No medicine was administered except a laxative draught.

A few months afterwards, the case of a clergyman occurred to me, in whom Aconite Ointment accomplished

substantial benefit by alleviating severe and paroxysmal infra-orbital neuralgia. Ointment of Veratria is sometimes almost as efficacious.

Flexile Collodion is a valuable application for many purposes. It undoubtedly relieves the neuralgia of herpes zöster when brushed over the vesicles; and I constantly use it to allay the local tension and distress of erysipelas. A small quantity of glycerine should be added to the Collodion. Amyl Colloid is another preparation which has been much commended: and equal parts of yolk of egg and glycerine make a good varnish for an irritable skin. Iodoform is a novelty which has been praised as a local anæsthetic in fissures of the anus, and is said to allay the spasm of the sphincter ani during defæcation. Used as an ointment (1 part to 3 of lard), it can be put on a small cylinder of charpie, and introduced into the rectum; the dressing should be changed twice a day. Dr. Purdon uses Iodoform for painful ulcers and *pruritus ani*.[5]

There are sundry painful and irritable worries of the skin for which we may have to use interchangeably poultices, embrocations, lotions, and ointments: and with all our knowledge we shall not always achieve a very rapid success. Such are the vagaries of idiosyncrasy and disease! A potato-starch poultice will pacify the torment of scabies;[6] and a bland mucilage to be smeared over an erysipelatous surface is lauded by Professor

[5] *Medical Times and Gazette*, Dec. 27, 1873; and *Dublin Journal of Medical Science*, June 1873.

[6] Dr. M'Call Anderson, "Parasitic Affections of the Skin," p. 250.

Wood of Philadephia. The burning of *acne rosacea* is quenched by a bran douche or poultice;[7] and olive-oil has an immense capacity for good in soothing the eruptions of the acute specific fevers, and in stopping the unbearable terrors of that happily rare complaint, *pityriasis rubra.*[8] A lotion of carbolic acid (extremely diluted), or of bichloride of mercury, alleviates pruriginous irritation; and the smarting of chilblains is said to be removed by friction with the fluid called "chloralum." A solution of nitrate of silver in spirits of nitric ether has some good qualities which are familiar to every surgeon.

Mr. Marshall has recommended the local application of solutions of Mercury and Morphia for the treatment of "persistent" inflammations. These solutions consist of oxide of mercury dissolved in excess of oleic acid: a small amount of morphia is then added, which doubtless combines as a base with oleic acid. By "persistent" inflammation is meant that which has become prolonged or persistent in a given locality—whether acute, subacute, or chronic. Pain more or less acute is always an element of the case. Solutions of oleate of mercury with morphia should not be rubbed in like ordinary liniments and embrocations; but should be merely applied with a brush, or spread lightly over the part with one finger. Mr. Marshall relates some instances of enlarged and painful joints which were

[7] Dr. Bulkley, *New York Medical Record*, Jan. 15, 1873.

[8] In a fearful case which occurred to me in 1869–70, no external application gave much relief but olive oil.

treated by this plan with remarkable benefit. It is usually advisable also to rest the joint, and to place well-fitted leather splints on each side of it.[9]

(*c*) The Endermic method of introducing medicines into the system is almost superseded now by the Hypodermic plan.

The application of medicinal agents to the denuded dermis was first spoken of by two French physicians, MM. Lembert and Lesieur. The subject was discussed by Ahrensen in his "Dissertatio de Methodo Endermatico," published in 1836, and comprehensively noticed in an early number of the *British and Foreign Medical Review* (April 1838).

The denudation of the dermis is usually effected by a blistering plaster; but Trousseau recommends a vesicating ointment composed of equal parts of strong solution of ammonia and lard. When the cuticle is elevated, an opening is to be made into it in order to allow the serum to escape; the medicine is then to be applied to the denuded surface either as an impalpable powder, or incorporated with gelatine, lard, or cerate.

If we were asked to specify the advantages of the Endermic method, we should answer that these advantages, when obtained, are analogous to those of the Hypodermic method. Medicines are not submitted to the influence of the digestive process; their pure effects are better and more quickly realized. But the disadvantages are peculiar and great:—thus, pain is caused

[9] *Lancet*, May 25, 1872.

by the contact of some medicinal substances with the denuded skin, and their constitutional operation is often indecisive. The remedies capable of controlling pain which we can put into the system by this channel are —the salts of morphia, atropia, and quinine.

We scarcely ever hear now of this plan of medication, and it is not likely to be raised again in professional esteem.[10]

It has been proposed to administer medicines by inoculation; possibly a foreshadowing of the hypodermic way. In this manner Morphia has been applied to soothe local pain.[1]

(*d*) The splendid results of the administration of medicines under the skin have now to be recorded. And these results are conspicuously seen in adding to our dominion over pain and countless other grades of discomfort. It seems needless, and would be laborious, to trace a minute history of the subject from the beginning; but there cannot be a better way of illustrating it than by consulting the original records of those who introduced and advocated the practice, and then ascertaining, as time goes on, the limits and conditions which experience seems to impose.

Dr. Alexander Wood's paper on the "Treatment of Neuralgic Pains by Narcotic Injections" was published in the *British Medical Journal*, Aug. 28, 1858. It soon became established by the testimony of competent

[10] But Dr. Silver and Dr. Handfield Jones have lately commended it, and not fourteen years ago a distinguished physician praised it at the expense of the hypodermic method! *Lancet*, Feb. 9, 1861.

[1] *Lancet*, 1836–37, vol. i. p. 826.

observers that (*a*) much less constitutional irritation attends the local introduction of a narcotic (say morphia) than when it is given by the stomach; (*β*) that the effect of a narcotic is much sooner produced; and (*γ*) the action of the narcotic appears more precise and sure when injected. Very remarkable is the fact that the hypodermic injection of a drug may produce the greatest benefit, when an equivalent dose of the same drug administered by the mouth is entirely useless, or even injurious. Dr. Wood's hypodermic treatment was directed exclusively to the painful part; but as this strict localization of the narcotic injection often produced abscesses, Mr. C. Hunter made experiments which proved that the hypodermic injection of the connective tissue in any part of the body is quite as striking and as curative in its effects as when the injection is localized in the neuralgic part or organ.[2]

Most attention was first claimed for this method of treatment by the exigencies of neuralgia, and the notorious uncertainty of all known medicaments to subdue the terrible pangs which infest some important nerves. Beyond the range of this subject of Pain we have not to go. Morphia was the drug first and most frequently tried, dissolved in distilled water by acetic acid, and any excess of that agent neutralized, so that the solution caused no irritation. Equal parts of tincture of opium and henbane were sometimes injected. In France a preference was shown for sulphate of atropia, a trial of which in fifty-three cases was reported

[2] *Medical Times and Gazette*, April 5, 1859.

by M. Béhier; and in twenty-two other cases the same physician used sulphate of strychnia. It is noticeable that M. Béhier considered it essential to introduce the injections at the seat of pain.[3]

Stress was laid by Dr. Wood on a judicious selection of cases for a trial of the remedy. Mr. C. Hunter thought that the injection of a narcotic should be used at once in most cases of sudden, violent pain, such as that caused by the passage of a renal or biliary calculus. For most neuralgic affections other remedies should be resorted to first; but there are some diseases (like rheumatism) in which pain, though not the essence, yet forms so intense a feature in the clinical history, that we may try the hypodermic injection with the hope of curing pain and checking the disease at the same time. The cramps of cholera are wonderfully mitigated by this plan, and a new field of therapeutic research seems to be opened if our country should be again afflicted with cholera.[4] Spasmodic colic is almost instantaneously relieved in its twofold element of pain and spasm; my own testimony is emphatic that nothing else need be thought of, but that hypodermic medication by morphia may be tried immediately with the almost certainty of success. Nor is this treatment less appropriate for the agonizing tenesmus of dysentery.[5]

For less acute and urgent phases of suffering this

[3] *Lancet*, Aug. 20, 1859.

[4] See paper by Dr. John Patterson in *Medical Times and Gazette*, Jan. 27, 1872.

[5] Dr. Gallaher in *New York Medical Journal*," May 1871.

method has been tried with very satisfactory effects. Dr. Wilks treats lumbago by the injection of morphia. Dr. Clifford Allbutt recommends it for "nervous dyspepsia" characterized by instability and irritability, and accompanied perhaps by foul breath, thirst, and loaded tongue. Such forms of dyspepsia occur in "hysterical" women, and in men weighed down by anxiety and care. There is a combination of bowel troubles, the most prominent points of which are obstruction, great pain, and constant vomiting, and these desperate symptoms may all pass away directly the hypodermic influence of morphia is developed.[6]

Not less brilliant results are promised in the treatment of rapid inflammations. Concerning acute pleurisy, Dr. Anstie writes that the first act of the physician in the agony of the early stage should be to inject $\frac{1}{6}$ or $\frac{1}{4}$ of a grain of acetate of morphia (for an adult) under the skin, besides enveloping the painful side in a hot poultice. Dr. Anstie insists strongly on the advantages, indirect as well as direct, of subcutaneous over gastric administration of opiates.[7] Pneumothorax and acute peritonitis are wonderfully amenable to hypodermic narcotism. Oh, what a happy change does this plan offer from the fussy complex medication of half a century ago! To take from the pocket a little barrel and piston—to fill it with a tiny quantity of "drowsy

[6] An instructive case is related by Mr. Oliver in the *Practitioner* for Feb. 1871, of the relief of a terrible spasmodic affection of the bowels by hypodermic morphia. Hiccough is beautifully cured by this treatment, though morphia given by the mouth usually does much good.

[7] Reynolds's "System of Medicine," vol. iii. p. 941.

syrup,"—and to shoot that fluid into the flesh with the certainty of blunting one of the most awful pangs that can afflict mortals, is a vigorous and worthy exercise of Therapeutic Art. Oftentimes nothing more is required to be done, and we sweep away by this glorious *coup* an army of leeches, a flood of fomentations, and a whole dispensatory of doubtful and disagreeable drugs. Most of all should septicæmic peritonitis be early and energetically attacked by this remedial plan. The very beginnings of puerperal inflammation of the peritoneum should be treated by the injection of $\frac{1}{6}$ of a grain of morphia, to be followed in two or three hours by $\frac{1}{4}$ of a grain or even more; the repetition of the dose being dictated by a careful observation of clinical effects.

To Dr. Clifford Allbutt we are further indebted for directing our attention to the value of hypodermic morphia in the sufferings of every form of heart and aortic disease.[8] I have tested Dr. Allbutt's statements sufficiently often to be able to say to any timid practitioner, do not be afraid. It is extraordinary, but true, that the cases most relieved are those of mitral regurgitation, "when the head is full of venous blood, and distress and stupor seem striving together." The distress in the chest being calmed, and the tumult of the heart being stayed, the sinuses of the head empty themselves, and a true soporific anæmia is established. "Balance of function" is restored by tranquillizing the heart and allowing the circulation to recover its freedom; and it is marvellous to note, too, how pulmonary œdema

[8] *Practitioner*, Dec. 1869.

may vanish altogether. And thus the miseries of "cardiac apnœa" are mercifully palliated. Great relief, moreover, is afforded by hypodermic morphia in cases of *angina* with diseased coronary arteries, and in neuralgic distress from intra-thoracic tumour. Very decided, also, is the power of this medication over spasmodic bronchial asthma; and, indeed, whenever asthma defies the common ways of common physic, I submit that we ought never to refuse a patient the relief which is ordinarily brought by putting morphia under the skin.

Dr. Anstie has justly said that the discovery whose triumphs we are now commemorating has initiated quite a new era in the treatment of severe neuralgias. Affections of this kind are sometimes utterly cured by three or four injections of $\frac{1}{6}$ of a grain each; and very many yield after a week or ten days of such injections, repeated twice daily. Inveterate "epileptiform facial tic" may be so benefited, that life, from being a horrible and intolerable burden, becomes, not cheerful indeed, but comparatively peaceful and calm.[9] Dr. Lawson, himself a severe sufferer, has told us that (in his opinion) the "true and almost the only remedy for sciatica is hypodermic injection of minute quantities of morphia." He advises $\frac{1}{6}$ of a grain as the proper dose to begin with; the effects produced by the operation (which he recommends to be done soon after a meal, and in the locality of the pain) are—absence of pain, intense comfort for a time, prolonged sleep, and

[9] *Practitioner*, July 1868.

increased appetite. These results seldom last longer than twenty-four hours; and it will be well then to repeat the dose, and to increase the strength of it. In severe cases it will be requisite to inject twice a day, and the hypodermic use of morphia may have to be continued for many months. The prevention of the pain of the injection may be secured by producing a moderate degree of anæsthesia by means of the ether-spray apparatus. Dr. Lawson thinks that at present we know little of the pathology of sciatica, but is quite opposed to the theory that it is an affection of the central nervous system.[10]

A most excellent application of the hypodermic plan has been proposed in the treatment of threatened abortion. Dr. Isham, of Ohio, has recorded seven cases of threatened abortion, in all of which there existed forcible uterine contractions, hæmorrhage, and dilatation of the *os uteri*. In every case the uterine contractions and hæmorrhage were arrested, and the *os uteri* contracted. In addition to calming uterine action, the influence of the hypodermic injections spreads over the brain, and gives rest to the whole system.[1] Herein is another illustration of the fact that the quieting of a sensory disturbance causes a reciprocal quiescence of motor power.

For the tortures which are caused by Aneurism and Cancer, we have no remedy comparable to hypodermic

[10] *Dublin Journal of Medical Science*, June 1872. A large experience of Sciatica in private and hospital practice obliges me to say that Dr. Lawson's therapeutic picture seems too bright and cheering.

[1] Hay's *American Journal*, Jan. 1873.

morphia. The pain which always accompanies Cancer at one or more of its stages, may be soothed so much that those natural functions which were interrupted by the bare intensity of the pain are resumed for a time with facility and enjoyment. The exasperating miseries which arise from the physical pressure of intra-thoracic cancer, are some of the keenest which humanity has to bear; and gastric cancer has a bad pre-eminence for companionship with atrocious pain. No patients are more grateful for this discovery in therapeutic science, and none look with such piteous eagerness to the morning and evening visits of the doctor who brings the merciful boon. Seldom does it afford more pride and pleasure to be a physician! Certain is it that the medical man who (from ignorance or timidity) withholds hypodermic medicine from a patient afflicted with cancer, is guilty of indirectly permitting a huge quantity of unnecessary pain; and with our present knowledge and opportunities of gaining knowledge, he is totally without excuse. The suffering caused by external cancer demands with equal urgency to be met by the same plan.

Some infirmities of the Skin clamour for hypodermic medication—notably prurigo and pityriasis rubra. The former may perchance be cured, and that case of the latter disease of which I have already spoken was vastly relieved by the injection of $\frac{1}{6}$ to $\frac{1}{4}$ of a grain of acetate of morphia three or four times a day. Certain painful cases of *mollities ossium* and chronic rheumatoid arthritis must be treated in a similar way.

A number of surgical diseases and accidents (*e.g.*, hernia, carbuncle, and some destructive processes in bone) are well handled by the judicious injection of morphia.

The anæsthetic inhalation of chloroform may be helped by hypodermic morphia. A quantity of the former, insufficient to produce anæsthesia, becomes sufficient to do so if a dose of morphia be injected before the inhalation of chloroform begins. Anæsthesia is induced without an initiatory stage of excitement, and without those risks which are incidental to large doses of chloroform.[2]

Many authors recommend the hypodermic use of Atropia, which is not a direct hypnotic, but often makes sleep possible by relieving severe pain. It has been noticed that persons who are quite unable to bear morphia will often bear atropia.[3] Asthma is much relieved by it, and M. Courty advises it to be introduced over the course of the pneumogastric nerve. Atropia has been called the best medicine for every kind of pain in the pelvic viscera. But it is an exceedingly dangerous remedy, and so little as $\frac{1}{100}$ of a grain is the fit dose to begin with.

An excellent custom is to combine about $\frac{1}{100}$ of a grain of atropia with every hypodermic dose of morphia.[4] The casual inconveniences of the latter (sickness and faintness) are thereby usually moderated or removed.

[2] *Journ. Anat. and Phys.*, Nov. 1869 (Claude Bernard).

[3] *Practitioner*, July 1868.

[4] See remarks on this point by Dr. Wilson in "St. George's Hospital Reports," vol. iv. p. 19.

The injection of a number of other substances has been suggested by different writers. Strychnia has been tried and found to be a most valuable remedy for gastralgia and neuralgia of the heart; the proper commencing dose is $\frac{1}{120}$ of a grain. Supra-orbital neuralgia has entirely yielded to two injections of $\frac{1}{60}$ of a grain each time.[5] Caffeine has been used successfully for sundry forms of neuralgia. And the injection of bichloride of mercury has been followed by remarkable results in the case of syphilitic pain; but there is always the drawback of the possibility of abscess in the seat of injection.

Dr. Bartholow publishes cases in which "tic douloureux" had been remarkably alleviated by the deep injection of chloroform. By this is meant the insertion of the needle of the hypodermic syringe deeply into the tissues, and the injection of the chloroform into the neighbourhood of the nerve-trunk the peripheral distribution of which is the seat of pain. In the cases which have been reported, the infra-orbital branch of the nerve has been the cause of offence, and the operation consisted in passing the needle under the upper lip in the direction of and near to the infra-orbital foramen, and then injecting from ten to twenty minims of pure chloroform. Very considerable pain is felt at the moment of injection and for a few minutes subsequently, but this presently subsides and is succeeded by a feeling of numbness aud of anæsthesia of the parts into which the chloroform diffuses.[6]

[5] *Lancet*, April 11, 1874.

[6] *Practitioner*, July 1874.

The perilous abuses of hypodermic medication have been most felt in the case of morphia. Dr. Clifford Allbutt has delivered a seasonable caution on the subject, and reminds us that this special medication is to be regarded as a solace from pain during the careful trial of other therapeutic means;[7] otherwise pain may be perpetuated, demanding ultimately the use of artificial stimulants not less dangerous in their physiological action. A very large experience of hypodermic morphia (during nearly fifteen years) prompts me to emphasize Dr. Allbutt's warning, and to add that mania and delirium, occurring as collateral symptoms of disease, are generally bars to all use whatever of hypodermic medicines.

A word on the pharmacy of the question. Strong solutions of the alkaloids are apt to spoil; they become turbid, and fungi appear on the surface. Boiling distilled water should be used; alkaloids must be dissolved with the aid of very diluted sulphuric acid, and the solutions should contain glycerine to the extent of $\frac{1}{4}$ of their total volume.[8] The best safeguard is that our hypodermic solutions should be as fresh as possible. An official preparation appears in the "Additions to the British Pharmacopœia" published early this year. Deposits in the syringes ought to be carefully removed, and the syringes themselves kept scrupulously clean. Many writers attach importance to the injections being made slowly.

[7] *Practitioner*, Dec. 1870.

[8] M. Adrian in *Bull. Thérap.*, July 1872.

When a medical man is consulted about a case of neuralgia, it is a sound point of practice, if the patient be a stranger, to prescribe morphia at first by the mouth; or at the least to inquiry diligently about special susceptibilities to the toxical side of Opium. I know a lady (under sixty years of age) who cannot suck a morphia lozenge without feeling sick and faint; a medicinal dose so small as $\frac{1}{16}$ of a grain makes her exceedingly ill; and possibly a hypodermic dose of $\frac{1}{12}$ of a grain would be fatal. I have cured a number of cases of trigeminal and sciatic pain with gastric morphia: and I submit that the idea of neuralgia is not necessarily associated with hypodermic medication. We should not rush to this as our first therapeutic thought and act. Even by esteemed authorities the initial dose of morphia under the skin is announced too high; it is prudent for this never to exceed $\frac{1}{10}$ of a grain for an adult female, and $\frac{1}{8}$ of a grain for an adult male. The patient may be informed that the first dose is not likely to produce much benefit, but that a preliminary test of morphia-susceptibility is indispensable; and the result of this being satisfactory, we may push on with confidence, and even with boldness. I have not had the misfortune to meet with a single accident, but as a fatal consequence has happened several times from comparatively small doses, how can we be too cautious? To slay when we hope to cure is to the medical conscience a most sorrowful disaster. But when all deductions have been made, we must consider the system of hypodermic medication as of very high importance, for it contains

every element of brilliant success in the effort to alleviate pain. Let all honour be paid to its discoverer, for it deserves to rank with the therapeutic application of Chloroform.[9]

(*e*) This seems the proper place to speak of that endermic treatment for which Nature offers opportunity by pathological breaches of surface. An ulcer is a morbid entity which asks to be healed and to have its pain soothed; and often we can do both at the same time and by the same processes. The surgeon has a large resource for these objects, but the applications which (perhaps) fulfil the double purpose best are the bland forms of ointment. The virtues of zinc ointment are almost a proverb, and chalk ointment has properties which are conspicuously soothing and healing.[10]

The terrors of an open cancer tax severely medical beneficence and skill. Little can be done, but that little must never be neglected. Stramonium ointment has been warmly recommended, but I do not know that it is much better or worse than anything else which guards exposed nerves from the stimulating properties of common air, and protects them from small accidental injuries. But it is within the bounds of a distant

[9] Here, as elsewhere, we see the correlation of nerve phenomena; puerperal convulsions (a motor disturbance) are successfully treated by Scanzoni with hypodermic morphia, and a gastric ulcer has apparently healed when its exquisite sensibilities are blunted in the same way. Trophic nerves are made unfit for their special function when disorganized by pain.

[10] See my "Manual on Ulcers and Cutaneous Diseases of the Lower Limbs:" London, 1868. For painful ulcers Mr. Bryant advises the application of a solution of opium.

possibility to heal a "malignant" ulceration by something which deadens the pain.

Burns and scalds are among the urgencies of surgical practice. The effect on the nervous system is compounded of pain and shock, and the latter is always aggravated by the former. Mr. Skey brushed over the "raw" surface with a pretty strong solution of nitrate of silver; but most practitioners prefer the benign influences of "dusting powders," such as starch, arrow-root, flour, or chalk. Fine cotton-wool excludes air better than almost anything, and soothes the excoriation of a burn or a blister. The *pruritus* of chicken-pox is allayed by applying calamine or fuller's earth (E. Wilson); and the severer trouble of small-pox may be met in a similar way. I have succeeded in curing *onychia maligna* with the local use of powdered nitrate of lead, as advised by Mr. MacCormac.

Who can number the "infallible" remedies for Toothache? Without encroaching on the skilled craft of the dentist, the expertness of "domestic medicine" is favourably exhibited in the variety and ingenuity of the stuff which is put to or in decayed and sensitive teeth. The pain often arises simply from the exposure of the nerve by the partial destruction of the little tegumentary organ which ought to cover it; and until the tooth-doctor be summoned with his instruments to "stop" the tooth, the ordinary medical attendant may be asked to appease the ache and the throbbing. A tiny fragment of chloral may be placed in the cavity of the offending tooth, or a small pledget of cotton-wool

previously soaked in laudanum, chloroform, or ether. It has been recommended to apply one or two grains of acetate of lead or nitrate of silver in a similar way; or the sensitive spot may be varnished with a mixture of creasote and collodion.

Earache is sometimes removed by the introduction into the *meatus auditorius* of cotton-wool moistened with chloroform and laudanum.

Syringing the Nostrils will generally bring away impacted mucus or anything else which blocks the passages, and causes distress.

Another organ of special sense, the Tongue, has many worries. In advanced pulmonary comsumption, the tongue may be raw, and deglutition painful. Dr. Douglas Powell prescribes for this condition chlorate of potash and glycerine in some syrup containing morphia. A teaspoonful swallowed slowly acts locally on the parts affected, relieving at the same time the cough. The tongue cleans, the pain is lessened, and the patient is enabled to take more nourishment and remedies which prolong life.[1] Painful fissures of the tongue may be alleviated, possibly healed, by the local use of glycerine of borax or *mel boracis*.[2]

[1] *Lancet*, Dec. 19, 1868.

[2] For this and kindred points, Mr. Fairlie Clarke's work should be consulted.

Section V.

ELECTRO-THERAPEUTICS.

Electricity is winning victories over pain every day. The therapeutic application of this Science has so advanced during the last few years that electrical instruments have become part of the *armamentarium* of every physician. The history of this subject is extremely interesting, but it would be tedious to do more than present the general result of recent investigation. Electric force had long been known to have a beneficial influence on palsied muscles; but its power over the phenomena of disturbed sensation was much less quickly recognized. The language of Dr. Tibbits is not a bit too strong when he says that "Electricity has been proved to be sometimes unapproached in its power of relieving pain. None of its therapeutic results is more firmly established; and were it in no other respect of use, its services here would entitle it to a foremost place as a remedy."[3] For neuralgia it seems to be now generally understood that the constant voltaic current is the form in which it must be almost always applied. Dr. Tibbits advises that both electrodes be held firmly pressed and immovable on the skin. On the other hand, Mr. Stead, of Manchester, relates cases in which he moved the electrodes about, although he did not take them off the skin for about two minutes;

[3] "Handbook of Medical Electricity," p. 95.

he then rested for one minute, and put them on again for two minutes more.[4] The electrodes should be always so applied as to include in their circuit the part or nerve affected. Dr. Tibbits's instructions are that the number of cells should be the highest that the patient can bear without discomfort. The length of application should be from five to ten minutes, and the frequency once or twice a day. The direction of the current does not seem of importance : Dr. Lawson says plainly that there does not seem the least difference therapeutically whether the positive pole be placed in one position or another ; and Dr. Poore writes that he has paid no attention to the direction of the current or the position of the poles. The true *locus morbi*, if it can be made out, should be included between the poles : and if there be tenderness over any of the vertebræ corresponding with the part of the cord from which the painful nerves arise, one of the rheophores should be placed at or a little above this spot. The other rheophore should be applied *seriatim* to the various painful spots along the course of the nerve.[5] Other practitioners apply both electrodes to the part where the pain is, keeping them about an inch from each other. In employing galvanism for neuralgia of the trigeminus nerve, we must be careful, because of its effect upon the eyes, not to use too strong a current.

Dr. Russell Reynolds's testimony is equally clear as to the value of the continuous galvanic current for such painful affections as *migraine*, "tic douloureux," and

[4] *Medical Press and Circular*, Nov. 1, 1871. [5] *Lancet*, Aug. 29, 1874.

sciatica. He also uses it in some conditions of modified sensibility—as the spontaneous feeling of heat and cold, the sense of numbness, of tingling, and similar discomforts.[6]

Of the galvanic apparatus, the number of cells used must be determined by the region affected. In the face we should begin with five; but on the occurrence of the least giddiness the application should be discontinued and fewer cells put in action. About 15 or 20 cells will be the *maximum* applicable to the face, which may be increased in other parts of the body; but the practical guide must be, the highest number that can be borne without uneasiness. It is a good rule to discontinue the use of the electric apparatus directly the pain ceases.

Faradization sometimes does good to true neuralgia; but everything depends on the kind of faradic current used, and the method of application. A rough harsh current always does harm, even when used gently and cautiously; but a rapidly-interrupted and pleasant current, when applied cautiously, frequently relieves and even cures true neuralgia.

Dr. Beard's aphorism is sound that it is better to use a mild current a long time than a strong current a short time; electro-therapeutics cannot be thus concentrated. To attempt to gain time in this way is cruel economy.[7]

The electrical treatment of sciatica is thus described by Dr. Lawson. The patient should recline on a couch,

[6] *Lancet*, Oct. 15, 1870.

[7] *Practitioner*, Sept. 1873.

with the hip and outer side of the affected limb exposed and uppermost. The sponges of the conductors being then moistened, one should be applied to the skin just above the point of exit of the nerve from the trunk, and the other over the seat of the nerve at about the beginning of the lower third of the thigh. If the skin be thick and tough, put for twenty-four hours previously a small cold-water dressing over the parts against which the poles are pressed. By this means the skin becomes saturated with water and is made a better conductor. The relief afforded by the continuous current is, according to Dr. Lawson, neither of long duration nor of great extent. For some few hours the limb feels rather deadened, and the suffering is certainly more tolerable; but this condition of things does not last long, and under the best circumstances the pain is not entirely banished.[8] As reasons why sciatica is thus obstinate, Dr. Beard reminds us that the nerve is larger and longer than any other; and the extent of surface to be treated is, of course, much greater than in other forms of neuralgia. And the nerve, especially near its origin, is so deeply situated that only a very small portion of the current, in external applications, can reach it.

The electrical treatment of gastralgia yields good results. Central galvanization must be used. Very chronic cases are often cured, and the relief is permanent.

Dr. Buzzard reports the case of a woman, æt. 65, who had suffered for three months from paroxysms of agoniz-

[8] *Medical Times and Gazette*, July 30, 1870.

ing pain in the neck and right arm, which attacked her several times every hour night and day, deprived her of rest, and rendered her arm useless. The neuralgia had followed seizures which sufficiently indicated its central origin. A constant current derived from 10 cells (afterwards increased to 15) of a Weiss' battery was applied from time to time between the cervical vertebræ and the hand, with the effect of producing remarkable relief to her pain.[9]

Facial neuralgia sometimes yields to electro-therapeutics in a decisive way, as in cases related by Niemeyer, Dr. Reynolds, and Mr. Stead. Dr. Beard says that the milder cases, in patients not too far advanced, and brought on by exposure to cold, are sometimes relieved and cured both under Faradization and Galvanization; but the more severe and long-standing cases in the very aged may be relieved, but are not usually cured. About 8 cells of Foveaux's splendid battery may be used, with very small sponges soaked in warm water, and fixed to those conical electrodes which are used for the localization of the current in paralysis of the *interossei* and *lumbricales* muscles. *Migraine* should be treated by central galvanization, which consists in placing the negative pole to the epigastrium, while the positive is applied on the top of the head, over the sympathetic nerve in the neck, and down the whole length of the spine; in such a way as to bring the brain, the pneumogastric nerve, the spinal cord, and all the prominent plexuses of the sympathetic system, under the

[9] *Lancet*, May 20, 1871.

influence of the current. Dr. Anstie tells us to pass the current from one mastoid process to another, and for only half a minute at a time. The prognosis of *migraine* under electric medication is favourable, but we cannot hope permanently to eradicate the habit.

Electricity has been used as an anæsthetic for extraction of teeth.[10]

Clinical experiments have been made by Dr. Reliquet, of Paris, in order to exhibit the action of continuous electric currents over painful spasmodic phenomena of the urethra, of the bladder, and of the ureters. The pain produced by the contraction of the bladder over a calculus may be instantaneously calmed, and possibly an opportunity may be afforded for instrumental exploration.[1] For neuralgia of the neck of the bladder, a constant current from 20 cells should be passed from the pubes to the perineum.

For the alleviation of the pain of rheumatoid arthritis, Dr. Althaus advises the use of the constant current. It should be applied to the suffering parts, so that the positive pole, armed with a small electrode, is made to touch the sore points, while the negative, connected with a large electrode, is placed in the neighbourhood. The current ought to be continued for four or five minutes.[2] M. Cherron, an Italian physician, asserts that the pain of chronic rheumatism may be considerably diminished by the application of the constant current, which, besides its local effects, improves the nutrition of the

[10] "Transactions of the Odontological Society of Great Britain," June 1869.
[1] *Practitioner*, Aug. 1872. [2] *Brit. Med. Journal*, Sept. 28, 1872.

whole body by helping to eliminate the rheumatic poison.[3]

Other illustrations of this branch of electro-therapy are supplied by the writings of Remak, Benedikt, Allbutt, Althaus, and Eulenberg. Dr. Poore observes that Electricity is no panacea, and often fails entirely to relieve pain, although it is probable that the cases in which it succeeds would outnumber those in which it fails. We are unable at present to give any rules which determine failure or success: but as our knowledge increases our powers of prognosis will doubtless increase also.

Section VI.

SURGICAL AND OBSTETRIC THERAPEUTICS.

In the warfare with Pain the Surgeon has many useful weapons.

(1) Acupuncture has long been in vogue among Eastern nations; but very little was known about it until Berlioz wrote in its favour in 1810. Dr. Elliotson, in the "Cyclopædia of Practical Medicine," recommended the practice to the English profession,[4] and lately it has much increased in repute. It is unnecessary to describe what is now so well known, but it ought to be remarked that the period during which the needle remains in the part is of great importance; the pain sometimes ceases

[3] *Practitioner*, July 1870. I must acknowledge that I am much disappointed with the effect of electricity in alleviating the pain of rheumatoid arthritis.

[4] Vol. i., p. 32.

instantly, but if one needle be allowed to remain in an hour or more, the operation is more efficacious than when several are inserted and speedily withdrawn. In some cases Acupuncture has to be done several times, but generally twice is sufficient.

Of all the varieties of Neuralgia, Sciatica is that which seems to be most distinctly relieved by Acupuncture. There have been many opportunities of testing this treatment among patients in the Bath Mineral Water Hospital,[5] and we are favourably impressed with it as an auxiliary to hypodermic medication, or even when used by itself. Professor Riberi [6] and Dr. Osborne [7] bear testimony to a similar effect. Mr. Craig, of Ayr, gives a list of cases in which facial neuralgia was much relieved and even cured by acupuncture, though he allows that it sometimes unaccountably fails.[8]

Dr Leared praises acupuncture as a remedy for so-called "muscular rheumatism;" and has found it quite as successful as Cloquet and Dr. Elliotson had reported it to be. A caution given by Dr. Elliotson deserves to be repeated:—"If the rheumatism be at all inflammatory, if it be accompanied by heat, or be aggravated by a high degree of heat, no relief is generally to be expected from acupuncture." [9] An interesting contribution has been made to this subject by Mr. Pridgin Teale, who

[5] Under the joint care of Dr. Hensley and myself.
[6] *Gazette des Hôpitaux*, No. xcvi.
[7] *Dublin Medical Journal*, No. xii.
[8] *Medical Times and Gazette*, Sept. 10, 1864.
[9] *Med.-Chir. Transactions*, vol. xiii. p. 467.

asks whether acupuncture may not relieve pain by causing a temporary active congestion, which serves as a starting-point for improved nutrition of the nerve previously impaired by the injury or inflammation.[10]

(2) The Actual Cautery was used for neuralgia by Delpech, who, after the separation of the eschar, kept up a discharge for a long time. The same means was much tried by the late Professor Syme for relieving the pain of certain stages of diseased joints. About ten years ago a case occurred to me in the person of an adult woman, whose sufferings from a diseased knee-joint were greatly alleviated by the local application of the actual cautery. Sir D. Corrigan's "firing-iron" belongs to this category of counter-irritants.

(3) There is an old-fashioned sound about Issues and Setons, but I have had ample proof of their occasional efficacy. They were employed for neuralgia by Baron Larrey, and they have been recommended for mitigating the spasm of angina and asthma;[1] but I have found them most beneficial in particular forms of headache, associated with a rheumatic or gouty diathesis. And short of headache there are many obscure and uncomfortable head-symptoms, belonging mostly to the type of congestive apoplexy, which may be really made to go away altogether by the wearing of an Issue for months, even for years. A tradesman formerly under my care has worn an Issue in the left upper arm for eight years and a half, and he announces with joy his entire freedom from a host of cerebral troubles in the shape of fulness

[10] *Lancet*, April 29, 1871.

[1] Dr. Waring, *op. cit.*, p. 856.

and dizziness and pain. But we must candidly confess the outrageous abuse of this remedy in the past treatment of diseases of joint-structures and bones.

(4) Bloodletting carries us back to heroic days; but it is our duty to study the practice with philosophic impartiality. General Bloodletting is performed by opening an artery or a vein, almost always the latter. The dangers of excessive Bloodletting have been vividly drawn by Drs. Hope, Alison, and Todd; practised in moderation, what can it do towards the soothing or removal of pain? When pain arises from congestion of heart and lungs due to inflammation within the chest, then general Bloodletting may lighten these congestions and proportionately lessen the pain. The subject has been ably discussed by Dr. Markham; and, viewed from his standpoint, the question is a static, not a vital, one. It hinges upon the physical obstruction to cardiac and pulmonary functions: and when this obstruction is partially or wholly removed by the abstraction of blood, the pain may cease.

For any other sort of pain, *quoad* pain, general Bloodletting is, in my judgment, a barbarous heresy.

Local Bloodletting includes leeching, cupping, and scarification. A local inflammation may cause local pain, or local uneasiness, and the instinct is to take blood from the part; and if blood be let at all, it ought almost always to be done by local means. Dr. Stokes recommended leeches to be applied to the epigastrium for the burning heat of "acute gastritis."[2] Congestive

[2] "Cyclop. of Pract. Med.," vol. ii. p. 325.

headaches may be alleviated by the application of leeches to the temples.[3] Leeches to the *os uteri* have been known to relieve a sciatica,[4] and certainly they often do good in neuralgic dysmenorrhœa. Local depletion is scarcely ever required for pure neuralgia, but is said to allay the irritation of some pruritic disorders of the skin. Scarification of the gums is a time-honoured procedure much too often resorted to, but it probably does diminish the suffering of the natural process of "cutting the teeth." And Trousseau tried the remarkable expedient of division of the chief artery at the seat of pain.

Cupping is an easy and commodious way of letting blood, and in my hands has produced very quick effects in subduing congestive discomforts of thoracic viscera.

In general terms, it may be asserted that the scope of Bloodletting (in any form) for the relief of pain becomes more and more circumscribed in proportion to the exactness of our knowledge on the pathology of neuralgia.

(5) Neurectomy is the despairing resource of the Physician when he hands a case over to the final mercies of the Surgeon.

It seems almost a paradox that the complete division of nerves should cause neuralgia, and yet be proposed as a remedy for neuralgia. The subject has been discussed by Dr. Lockart Clarke,[5] who believes, however, that incomplete division of nerves produces much severer consequences than when the division is complete;

[3] M. Lisfranc's rules for the application of leeches are still worth a study, and are quoted in the *Brit. and For. Med. Review*, xxvii., p. 3.

[4] Dr. Leishmann in *Glasgow Medical Journal*, Aug. 1866.

[5] Holmes's "System of Surgery" (second edition), vol. iv. p. 163.

because the free portions retract and put the undivided portion on the stretch. Possibly this is the explanation of those cases in which obstinate neuralgia has been caused and perpetuated by a scar.

An interesting and often quoted case is related by Dr. Darwin, in the second part of his "Zoonomia." All three divisions of the fifth nerve were successively divided by Mr. Cruickshank, of London; and although the patient was "evidently bettered by each operation," still the pain remained very severe. The portio dura nerve (a motor nerve, be it remembered) was next attacked, and completely divided at three separate sittings: and as the pain still affected the lower lip and side of the nose, some remaining branches of the second division of the fifth nerve were cut through. The "afflicted patient" happily survived all these assaults of the surgical knife, and was restored to perfect health!

It has been justly said that it is only in cases of pain of the fifth nerve that neurectomy can be practised without causing motor paralysis at the same time. Romberg urges that the greatest objection to the operation is the rarity with which it effects a cure; but Eulenberg speaks more favourably of it. Mr. Hulke records a case of supra-orbital neuralgia, in which he exposed the nerve as it leaves the orbit, and cut out about a quarter of an inch of two large branches into which it divided. The wound was covered with a couple of wire stitches and a compress. The ultimate result of the operation was far from satisfactory.[6]

[6] *Medical Times and Gazette*, June 7, 1862.

Another case is reported from the Royal Infirmary of Edinburgh in the practice of Dr. Joseph Bell, who made a T-shaped incision over the supra-orbital foramen, and exposed the nerve; a portion of this, about the third of an inch in length, was excised. On coming out from the effects of the chloroform, the patient said that the neuralgia had gone away, and fortunately it did not return.[7]

The neuralgia which accompanies frontal herpes zöster is usually cured by hypodermic morphia; but now and then section of the offending nerve may be necessary. This has been done twice by Mr. Bowman; in the one case with only transient success, while in the other success was relatively much greater.[8]

The division of the gustatory nerve in cancer of the tongue is a perfectly justifiable operation; it diminishes sensibility of the organ, and checks excessive secretion. The operation was suggested many years ago by Mr. Hilton,[9] and has been done more recently by Mr. Moore, of the Middlesex Hospital.[10] Besides other advantages to be expected from the operation, pain is soothed in the tongue and jaw, in the temple and crown of the head. The tongue is rendered numb, and patients have expressed themselves relieved. It is right to add that

[7] *Brit. Med. Journal*, May 21, 1870.

[8] Some remarks by M. Laquneur on this subject are worth reading in the *Annales de Dermatologie et de Syphilographie*, No. vi., 1871.

[9] "Guy's Hospital Reports," vol. vii., p. 263.

[10] Holmes's "System of Surgery," vol. iii., p. 915; and *Brit. Med. Journal*, Dec. 7, 1861.

the latest writers on neuralgia are quite adverse to the general principle of section of painful nerves.[1]

(6) Pressure, Rest, and Position are three mighty auxiliaries of all sound surgical treatment, and are powerful aids in the medico-chirurgical battle with pain. Now Pressure, skilfully exercised, conduces to Rest; it is often the first—or at least an early—step towards the attainment of Rest. There are some organs which can be made to rest so completely that it amounts to a virtual stoppage of function; and, as in sleep, so during this enforced repose, a more perfect nutrition can be carried on. Now this better nutrition is a great antidote to Pain; for whatever doctrine is true about the nature of Pain, we cannot doubt that the nearer we approach the standard of health and strength the more likely we are to render pain impossible.

A familiar example of the use of Pressure is seen in the common bandage. A leg affected with varicose veins is almost always painful; and the proper application of a bandage (made of suitable material) braces up the veins, consolidates the surrounding tissues, and decisively relieves pain. A truss prevents the "dragging

[1] On the other hand, Dr. Gross reports four very successful cases of excision of the inferior dental nerve for intractable neuralgia (*American Journal of Medical Science*, Jan. 1869): and Dr. Weir Mitchell advises neurectomy for traumatic neuralgia (*Phil. Med. Times*, Dec. 6, 1873). The analogy of neurectomy for Tetanus will occur to the reader. (See paper by Drs. Rizzoli and Martinelli in *Gazette Hebdomadaire*, No. xxxi. 1873; see also Mr. Erichsen's "Science and Art of Surgery," fourth edition, p. 695; and at the moment of going to press, my attention has been directed to a treatise on this subject by M. Létiévant, Paris, 1873.) I know nothing of Neurectomy from personal experience, but I have tried to give an impartial (though brief) summary of professional judgment on the question.

pain" of a threatening hernia of bowel: and an abdominal belt has some merits of the preventive kind. Spinal weakness and uneasiness may be infinitely lessened by the adjustment of proper supports. The sufferer from headache almost instinctively presses the head with his hand, or buries the head firmly in the pillow; and often have I seen the hand laid flatly and firmly on the back of the neck to "deaden" the acuteness of cervico-occipital neuralgia. Other illustrations of the value of Pressure are seen in the use of starched bandages for sprained joints (Guersant); in the casing of painful rheumatic joints with splints; and in the support of a carbuncle with pieces of strapping or soap plaster.

Kneading and frictions may be described as a kind of movable Pressure. The dangers of some forms of painful obstruction of the bowels may be lessened by graduated pressure on the abdomen from behind forwards: and for pleurodynia Niemeyer recommends the systematic stroking of the painful muscles after the use of a vapour bath and hot blankets.

There are many surgical means and appliances the object of which is to cause that salutary pressure which either anticipates pain, or prevents it from being communicated to the sensorium.

Rest is a theme for poets as well as for physicians. Pain is said to be frequently the product of over-work; but it is more often the product of under-rest. Rest and Work, in proper proportions, are the natural preservers of function, and the promoters of physiological health.

Pain is one of the sentinels of disease ; it is prudent to suspect disease whenever there is persistent pain ; and it will be found that Rest sometimes cures, first the pain and then the disease. For a philosophical exposition of this principle Mr. Hilton has won name and fame, and for an application of it to the acute and chronic exigencies of clinical surgery I refer with pleasure to his published works. Perhaps it is in the management of diseased joints that the triumph of Rest as a curative art is most conspicuously seen.

But the physician uses Rest with not less ready joy than the surgeon. As the first principle to be followed in the treatment of Pleurisy, Dr. F. T. Roberts maintains that we ought to restrain the movements of the affected structure, to prevent the friction of the inflamed surfaces against each other, and to keep the parts as much at rest as possible. Certain appliances should be fixed around the affected side more or less extensively, so as to limit or prevent its movements. This purpose is fulfilled by the firm application of three or four strips of plaster round the side; this simple plan almost invariably gives complete relief in that group of cases in which the inflammation is localized to a small patch, and appears to have but little tendency to spread. But a more thorough method must be employed in the early stage of a severe and extensive attack of pleurisy. A number of strips of plaster must be used, put on in the following manner:—the first strip is laid on obliquely in the direction of the ribs, the second across the course of the ribs, the third in the direction of the first (about

half overlapping it), the fourth as the second, and so on until the entire side be covered. A strip is also passed over the shoulder, which is kept down by another fixed round the side across its ends. According to Dr. Roberts, the course and termination of a good number of cases treated in this way have been most satisfactory, while relief to the pain and other distressing symptoms has been generally immediate. Pleurodynia is similarly relieved by applying two or three strips of plaster firmly round the side over the seat of pain.[2]

Position is an important matter in surgical practice. We sling an arm because the pain of whitlow or of local erysipelas is increased by allowing the limb to hang down: and a "bad leg" is sometimes placed in the horizontal plane for a like purpose. During a "sick headache" it is good for the head to lie as low as possible. The whole body must now and then stay in the recumbent posture in order to escape pain. But occasionally pain is relieved by movements, such as shampooing and tapping.

(7) In a concluding paragraph I may summarize some of the exploits of Operative Surgery in taking away the causes or the conditions of Pain. Joints are excised partly on account of the pain kept up by disease of the joint-ends of bones;[3] limbs are cut off for the same reason. A surgeon ties an artery because it is connected with an aneurism, and the aneurism is vexatious and

[2] "Handbook of Medicine;" and *Practitioner*, March and May, 1874.

[3] Mr. W. P. Swain speaks of excision of certain diseased knee-joints as absolutely necessary on account of the pain ("Injuries and Diseases of the Knee-joint:" London, 1869).

painful. A strangulated hernia is almost always painful, and on this ground alone would need surgical interference (for the radical treatment of hernia we are indebted much to an English genius, Mr. John Wood). A similar remark applies to external cancer, other circumstances being deemed favourable. Abscess of bone is an excruciating affliction, which can be cured only by the process of trephining; and a subcutaneous process of incision may be required for some painful swellings of the periosteum. A painful neuroma must be taken away with the knife; and an "ingrowing toe-nail" has its difficulties requiring instrumental help. Among a number of reasons for tapping a dropsy (hydrothorax, ascites, hydrocele), or for removing a tumour, a very legitimate one is the suffering caused by bulk and pressure: and it is in this department of Surgery that the Aspirator displays its exquisite power. To puncture a limb when swollen with fluid, and to puncture a bowel when excessively distended with air, are acts of minor surgery which relieve a vast amount of distress. The throbbing hyperæmia of an inflamed gland or an abscess is alleviated by timely incisions; and it is important to divide freely the integument and periosteum over the mastoid process whenever severe pain is referred to the middle ear. Immediate iridectomy is the recognized operation for the pain of acute glaucoma. Some of the most delicate refinements of surgical experience are devoted to the relief of retention of urine and obstruction of the bowels, both of which conditions are usually characterized by pain intolerable and unceasing. Lithotrity and

lumbar colotomy have their obvious uses, and the acute agonies of defæcation through a diseased rectum are palliated by a simple operation for fissure of the anus, or by the passage of tubular bougies. Finally, pain is an element in those common accidents, dislocations and fractures; and it should make us prompt and correct in the application of our mechanical remedies.

Nor is the obstetric surgeon less anxious to remove pain, so far as it can be done by mechanical means. Dilatation of the uterine orifice with tents of laminaria or sponge may open a better outlet for menstrual excretion, and cure an obstructive dysmenorrhœa. A successful operation for vesico-vaginal fistula heals a chronic misery of an exceedingly wretched kind. Peri-uterine hæmatocele may need to be opened on account of its pressure on neighbouring organs; and a sudden and urgent pain in the history of extra-uterine gestation clamours for immediate gastrotomy. Other benevolent methods in this branch of practice might be quoted, especially as they happen in the course of Difficult Labour.

Section VII.

THERAPEUTICS OF HYGIENE AND MORALS.

What a wide field is open here! The principles of hygiene are identical with the laws of health, and whatever promotes health may save pain. Our most beneficent agencies are—pure air[4] and sufficient light; suitable

[4] "Ye who amid this feverish world would wear
A body free from pain, of cares a mind,
Fly the rank city, shun its turbid air."—Dr. Armstrong.

clothing; systematic muscular exercise (including out-door recreation); regular and not injurious occupations; the avoidance of bodily fatigue and mental anxiety; and the prevention of everything in daily life (particularly intemperateness in alcohol and tobacco) which lowers vital tone and power. An adequate amount of sleep is of much moment in sustaining health. On this point Professor Blackie says that "students are great sinners; nay, their very profession is a sin against repose; and the strictest prophylactic measures are necessary to prevent certain poaching practices of thinking men into the sacred domain of Sleep."[5] Darkness is sometimes a virtue, and in many folk stops a stormy outburst of cerebral pain. The therapeutic value of climate and soil must not be passed by. "Change of air" often acts as a magnificent restorative, and so invigorates the nervous system that neuralgia may be abated, and any constitutional diathesis which causes pain may be for a time removed. Sea-air has large hygienic qualities in all these respects.

The ancient Stoics allowed nothing to be evil but what concerned the soul and conscience; calling the calamities of body or fortune (such as pain and poverty) indifferent things. But we write on behalf of ordinary men and women; and the highest natures have often the most sensitive organizations. However humbly endowed may be the individual, the Mind is there; and it can be appealed to by the threefold channel of the Intellect, the Emotions, and the Senses. The Senses

[5] "On Self-Culture" (fourth edition), p. 49.

may be gratified by natural order and beauty, and by the splendours of the Fine Arts: the Emotions may be stimulated and diverted by agreeable friends[6] and pleasing hopes:[7] the Intellect may be entertained by books of recreation and lofty studies.[8] The Doctor and the Clergyman should be men of sympathy and cheer! In one or all of these ways the edge of Pain is blunted, and its mental havoc stemmed and turned.

Lastly, I speak with reverence and thanksgiving concerning the Christian Religion—Its consolations and Its promises. If Pain be a deep mystery, it is in this Religion that we discover what a high moral discipline Pain may become, and how it can dignify and strengthen the noblest parts of Human Nature.

I conclude this Treatise with a sense of its imperfectness. For sometimes when we have done our best, both in theory and in practice, we shall be humiliated by disappointment; pain may elude our skill because we cannot discover its cause, because of its inherent incurability, or because the precise agents for meeting it are not yet placed at our command. My object has been to point the way to distinct and trustworthy

[6] Cicero says of Friendship that it halves our sorrows and doubles our joys; and the Wise Man of old speaks of a faithful friend as the "medicine of life." See also a pleasant paper by Addison, *Spectator*, No. lxviii.

[7] Richter gives it as an excellent antidote against moral depression, to call up in our darkest moments the memory of our brightest. The Theatre, properly conducted, has many uses and benefits, which can be only cursorily noted here.

[8] Dr. Carpenter, in his "Principles of Mental Physiology," observes that Pain may be obscured, and even not felt, by the complete distraction of the attention elsewhere. The violent excitement of any sensation is disagreeable; and Pain and Pleasure are even interchangeable by habit.

principles, rather than to indicate all the details by which those principles are to be carried out. In a descriptive monograph dealing with a wide scope of subject, it is essential to observe unity and proportion, and not to give an undue bias to those points of practice which are most familiar to the writer. Most things brought forward in this Treatise have been sufficiently tested by my own experience; and the unprejudiced reader will sift, and weigh, and learn. The duty of relieving Pain stands foremost with every truthful physician; it is the grandest badge of his Art, and the best illustration of the progress of the Economy of Medicine. The materials for action are immense, and increase with the augmentation of science and learning; but in this matter as in others the ancient saying is true, that "he who hath little experience knoweth little" (Ecclus. xxxiv. 10). To gather up the materials of Medical Science which concern the alleviation and removal of Pain, and to present them in a shape for ready use, is the object of these pages: and if this immediate purpose be doubtfully and darkly fulfilled, it will be pleasant if I can stir worthier and abler minds to the study of a theme which is almost divine, and which flows over with tender pity to weak and suffering Man.

APPENDIX.

An interesting and important book has nearly escaped my attention. In 1872, Dr. S. Weir Mitchell, of Philadelphia, published a treatise on "Injuries of Nerves and their Consequences," drawing his illustrations largely from the American Civil War. In a chapter on the neuro-physiology of stumps, Dr. Mitchell says that many stumps are extremely sensitive, and this is especially true of the arm. Certain nerves are enlarged, hardened, and tender. Old stump-neuralgias never exist without a sclerotic state of nerve, originating in neuritis, and tending to progress centrally.

Whatever hesitation as to nerve-section may be reasonable in other cases, there should be but little as regards stumps:—firstly, because delay is apt to make useless any operation; secondly, because division of nerves in stumps is productive of so little loss of valuable function. When the pain is therefore intense and lasting, and does not readily yield, and

the nerve-trunks are tender, an early section of the nerve should be practised as high up the limb as possible. The operation should be such as to provide against reunion; and if, on microscopic examination of the resected portion of nerve, it prove to be diseased, it will be advisable to divide it at once still higher. It is useless to remove only the button-like enlargements at the ends of nerves.

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